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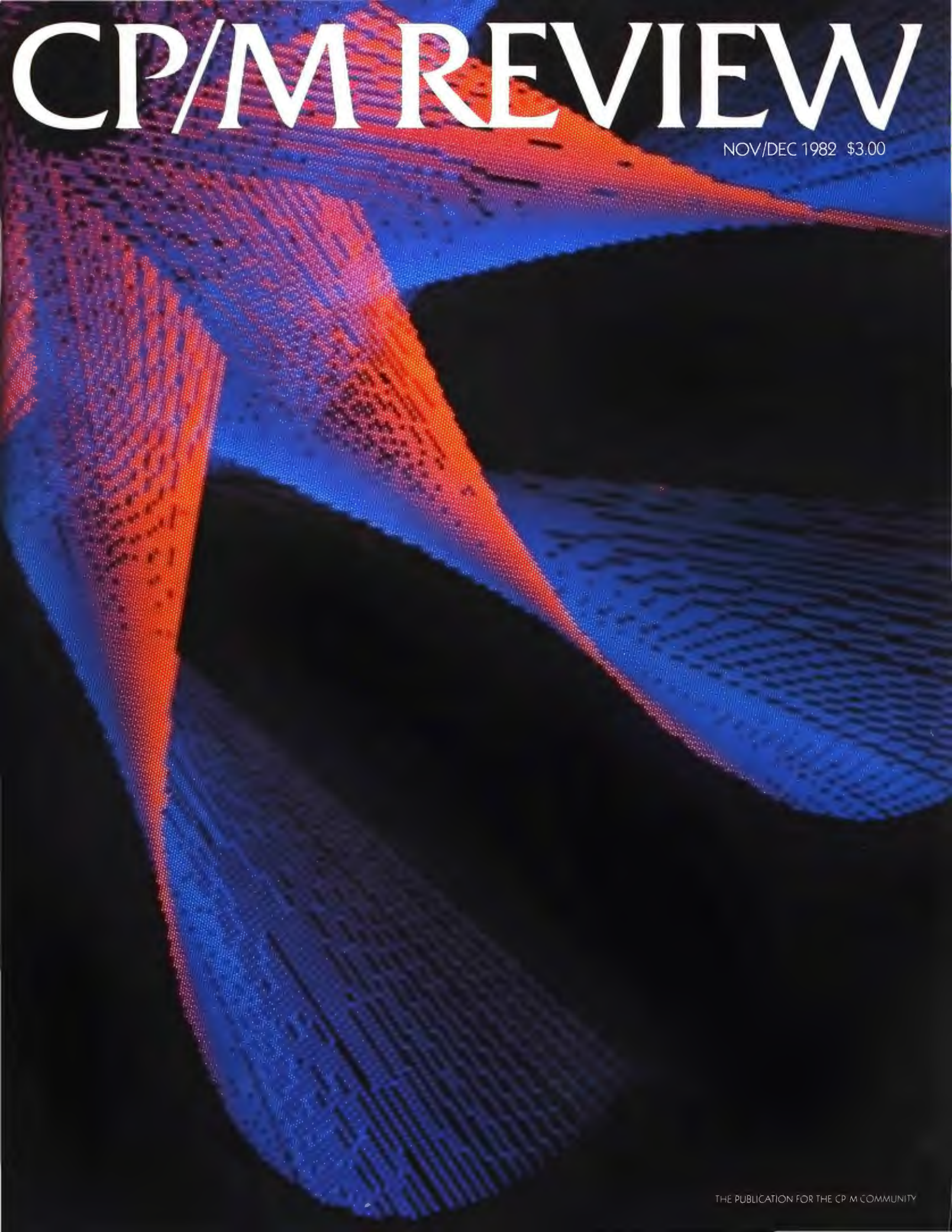

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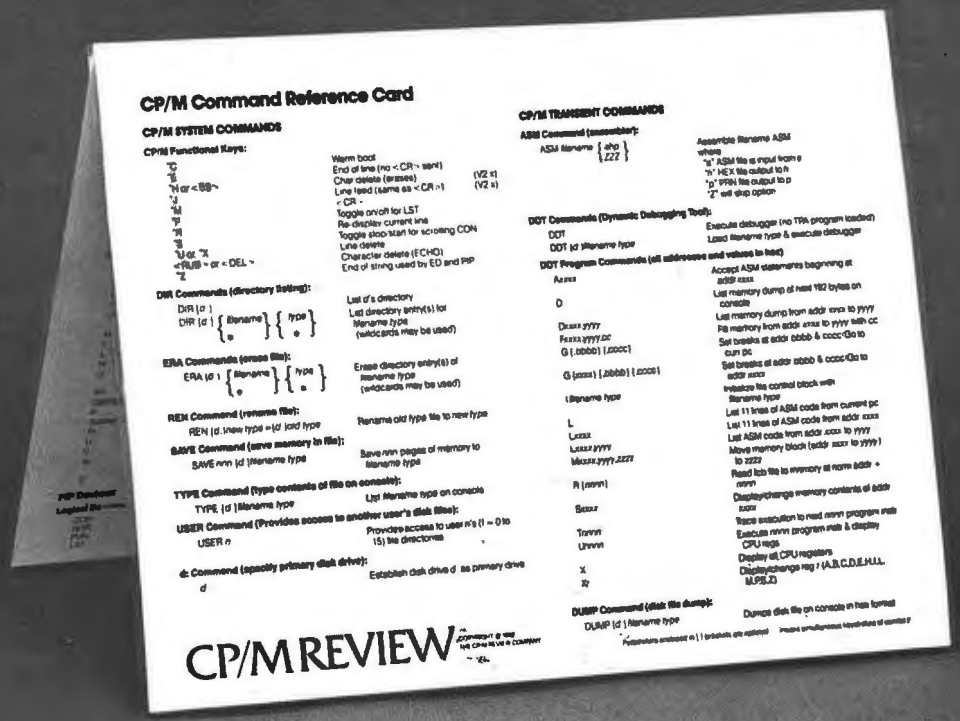

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CP/M REVIEW

THE PUBLICATION FOR THE CP/M COMMUNITY NOVEMBER/DECEMBER 1982 VOLUME 1, NUMBER 1

Our cover photograph symbolizes the "high technology" associated with today's world of display graphics. This photo was taken directly from the high resolution display of a Tektronix 690SR Option 42 Color Picture Monitor, reproduced approximately two times actual size. The computer-graphic was generated by Bill Mills, Tek Labs Graphics and Video Systems Department, using experimental computer graphics equipment built at Tektronix, Inc., in Beaverton, Oregon.

IN THIS ISSUE

2
THE MASTER FILE: YES...ANOTHER COMPUTER MAGAZINE by Pamela McKee

Editor's commentary on CP/M REVIEW. A new publication that focuses on the needs, events and interests of the CP/M Community. And, the future of CP/M in the computer industry.

4
RANDOM ACCESS:

CP/M product news. Motorola announces CP/M for MC68000...

6
COMPUTER LINGUISTICS: THE STRENGTH OF PASCAL STRUCTURES by Michael Richerson

PASCAL is gaining a large following in the micro world. A review of some of the reasons for using PASCAL. And, an example of the general structure of a PASCAL program.

10
RETRIEVALS:

Abstracts of CP/M articles from the computer press.

14
IN THE PUBLIC DOMAIN:

Public domain software, what it is, where to find it.

18
DATA DICTIONARY:

File terminology.

20
CPA INPUT: SOFTWARE NIGHTMARE by Roger Burke, CPA

A light-hearted discourse on expensing software on your tax statements.

24
CP/M REVIEW BUYER'S GUIDE: INSTALLMENT NUMBER 1

Photographs and reviews of 35 computers that use the CP/M system.

62
REMOTE COMPUTING: PUBLIC BULLETIN BOARDS

A guide to the use and contents of CP/M oriented electronic message systems.

82
LIST OF ADVERTISERS

84
YELLOW PAGE LISTINGS

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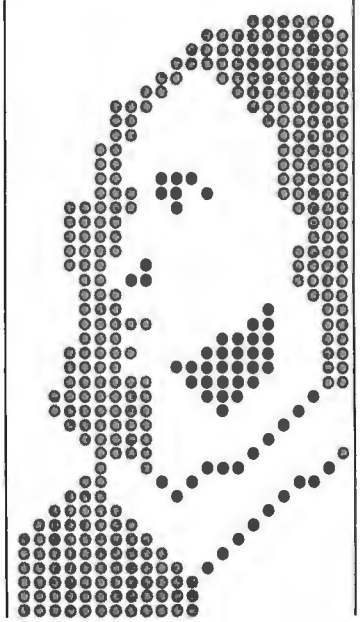

YES... ANOTHER COMPUTER MAGAZINE

CP/M REVIEW is different. It's specialized. Focusing on needs, events and interests of the CP/M community.

by PAMELA McKEE, EDITOR

The personal computer explosion is just beginning. Market surveys indicate that as many as 70 million will be sold in the decade of the 80's, with the average buyer going through two or three machines. It may sound trite to say that Digital Research's CP/M has become the defacto standard, but the fact of the matter is ... it really has! CP/M REVIEW was developed as the staff of this magazine feels that every segment of the computer industry will feel the impact of this standard. And, that there is a need for a publication dedicated to the system, not just a machine, to follow these impacts. Some of the industry explosions we are now and will be watching are:

COMPUTERS CP/M has made it possible for a small group of technicians and entrepreneurs to enter the computer market and compete with the giants by simply packaging the hardware, installing CP/M and leaving the brunt of the software support to others. Some of the entries in this month's Buyers Guide attest to this.

PERSONALITY BOARDS The "personality" board is an interesting phenomenon. Since most of the hardware expense is in the case, power supply, keyboard, CRT, etc., it makes sense to add a little extra electronics to convert to a CPU supporting CP/M. Microsoft's "SOFTCARD" for the Apple is a very successful example of this. It is just a matter of time until some enterprising group provides personality boards for TI, PET, Atari and any other installed base worth the effort. When an installed base becomes large enough, we won't be surprised to see products available to go the other way. For example, an Apple board for the IBM/PC??

Letters, comments or questions to the editor are invited. Also, let us know what "explosions" you're expecting.

MAINFRAMES Already personal computer users are beginning to complain to data center managers: "I can do this on my $2000 personal computer, why don't you have the capability on the $5 million giant?" Expect to see CP/M emulation modes of large mainframe timesharing systems one of these days.

MUSCLE MICROS A new breed of very powerful microcomputers based on the Motorola MC68000 or the Zilog Z8000 is becoming available. Generally, these machines are migrating toward the UNIX operating system. These systems are big; typically they have 512K bytes of memory and hard disks with 5M bytes and up. One of the more interesting issues yet to unfold is the CP/M-UNIX relationship. Certainly the UNIX world will want access to the rich CP/M software bank. It's a similar problem to that facing the mainframe manufacturers.

JAPANESE COMPUTERS CP/M is just what the Japanese manufacturers have been waiting for. They understand production quantities in the millions with excellent packaging and pricing being their real forté. Their current entries are just a beginning. Remember, as it has been said: "These are the people that buy our logs and steel, and return plywood and cars."

There are many fine periodicals on the stands, usually with some focus, such as a popular manufacturer or processor. Those without focus have become so diverse that little is relevant to your interests. CP/M REVIEW will focus on news relating to the owners of a CP/M based machine and to the suppliers of their products and services. We will act as a clearing house of information on hardware and software. In addition, we intend to perform a public service to this community by making our publication available for notices on clubs, user groups, bulletin boards and public domain software. We invite your input in these areas. □

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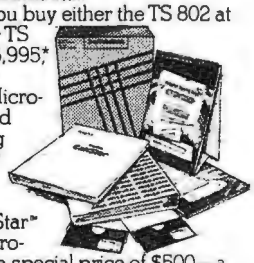

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Random Access

VENDORS: If you would like your product considered for review in the Random Access column, please send your press release and product literature to CP/M REVIEW.

Digital Research and Motorola Reach Software Agreement

CP/M-68K chosen as operating system for Motorola M68000-based development system.

Under an agreement with Digital Research, Motorola will sell the CP/M-68K operating system for the M68000-based EXORmacs development system.

"The agreement is the foundation of Motorola's plan to become heavily involved with third party software for the 68000," said Bill Lowery, Motorola MOS Systems representative.

According to Tom Rolander, Digital Research Operating Systems Division vice president, Motorola (developer of the 68000) is the latest semiconductor manufacturer to align itself with Digital Research. Rolander said: "The 68000 is a very popular processor, and we feel that CP/M-68K will become a standard operating system for 68000-based microcomputers."

Programming languages that already exist for the 68000 and other microprocessors allow many popular business application programs to be recompiled to 68000-based microcomputers from other 8- and 16-bit machines.

CP/M-68K maintains file compatibility with all Digital Research operating systems. Files from 8- and 16-bit microcomputers running these operating systems can be transported with no conversion to 68000-based machines running CP/M-68K.

Elliam Announces DMM-1 Utilities Software Disk for CP/M 2.x and MP/M Users

XDIR is the feature program on Elliam's DMM-1 utility software disk. XDIR displays the disk directory file names in alphabetic order and shows the file size for each file name. A disk usage summary is provided reporting the number of bytes on the disk, the number of file names in use and the space used. It also reports the number of available file names and space. XDIR works on single-density and double-density floppy disks as well as with hard disks.

In addition to XDIR, the disk contains other programs including: CONVERT — which changes all uncommented lower case characters to upper case. (Handy for listings and assemblers that will not accept lower case.); and, STATUS — which provides information about the current operating system, such as, memory available, TPA size, top-of-memory address, I/O assignments and more.

The price for DMM-1 is $35.00 plus $1.50 for shipping and handling. It is available from: Elliam Associates, 24000 Bessemer Street, Woodland Hills, CA 91367, 213 348-4278.

Information Retrieval System Developed for CP/M Users

Superfile, an information retrieval system from FYI, is designed to handle a large body of information where flexible access is required.

The text files containing the data to be retrieved may be created with any CP/M compatible text editor or user program in a free-form format. The main program maintains a dictionary of all key words indexed, and rapidly searches the index. Boolean "AND", "OR" and "NOT" combinations may be used in searching for key words. Retrieved information can be displayed, printed or written to another file.

A unique feature of the system is the 'close to' feature. An invalid key word entry, when retrieving data, will cause the program to display a group of key words which are in the dictionary and are alphabetically close to the invalid entry. This allows the user to guess his way to the information desired. Price is $195. Inquire to: Elliam Associates, 24000 Bessemer Street, Woodland Hills, CA 91367, 213 348-4278.

InfoSoft Improves C Compiler

The improved InfoSoft C Compiler requires only a 48K system and runs under I/OS, UNI/OS, MultI/OS, CP/M or CDOS.

The C language and compiler are designed for highly efficient and effective use of a system programmer's time. This program development tool and productivity aid opens the door to compatibility with languages producing Micro-soft format REL code. A three-pass true compiler, it can directly produce 8080 object code in relocatable format or assembler source.

Standard package features include: logs all C operators and statements, structures, unions and initializers and disk selection for overlays and library "include". For additional information, contact: InfoSoft Systems, Inc., 25 Sylvan Road South, Westport, CT 06880, 203 226-8937.

Intel Develops CP/M-86 On ROM chip

Intel Corporation has developed a solid-state version of Digital Research's CP/M-86 operating system.

"We feel that CP/M-86 will be one of the most popular operating systems for 16-bit microcomputers, and having it available in semiconductor-chip form will open many new opportunities for system designers," said Andrew Grove, Intel's president.

The new part operates with the popular Intel 8086 and 8088 microprocessors, allowing a designer to develop a diskless microcomputer with all the power of the disk-based version of CP/M-86.

CP/M-86 is the 16-bit version of CP/M, the de facto industry standard operating system for 8-bit microcomputers.

CP/M and its variations are now available only on floppy disks, and require access to a flexible or hard disk drive. The new firmware version will not require a disk, making it ideal for remote computers sharing a large-capacity disk drive. The firmware CP/M-86 also allows the manufacture of smaller, low-end diskless systems.

The Intel silicon CP/M-86 chip will be available from Intel and its distributors.

Introl Announces C Compiler

Introl-C/6809, a C language compiler system for the 6809, is now available as resident software for systems running under FLEX, UNIFLEX or OS-9. It is also available as cross-software for use on CP/M-based systems.

The version 2.0 release supports all standard C features except initializers and bit-fields, and the #line and #if preprocessor directives.

Written entirely in the C language, the Introl-C software package includes a C compiler, 6809 assembler, linking loader and library manager. Source code for the runtime library is included to allow the user to tailor developed programs to any runtime environment.

Introl-C/6809 is available on 8" diskette for FLEX-09 ($300), UNIFLEX ($350), OS-9 ($300) and CP/M ($350). For more information write or call: Introl Corp., 647 W. Virginia Street, Milwaukee, WI 53204, 414 276-2937.

Multi-User Accounting Software Available for MP/M Systems

The Business Software Series offered by Microcomputer Consultants is for use with multi-user computer systems. The packages run under the MP/M-I or MP/M-II operating systems and allow true multi-user access: different users may access and update the same data files simultaneously.

The series includes inventory control for manufacturers, job cost control, general ledger, accounts receivable, accounts payable and retail/wholesale inventory.

It also incorporates a record-locking scheme which prevents users from interfering with one another. All users may display the same record simultaneously; however, as soon as one of the users begins to change the record, it is locked, and none of the other users may alter it. The record is unlocked when the change has been successfully completed.

Written in PL/I-80, the series uses Digital Research's Access Manager utility for file handling. List prices for modules in the

Business Software Series range from $600 to $995. For details, contact: Microcomputer Consultants, P.O. Box T, Davis, CA 95617, 800 824-5952.

Tektronix Announces Local Programmability for 4110 Series Graphics Terminals Including CP/M

Tektronix has introduced Local Programmability for its 4110 Series of intelligent computer display terminals.

The Local Programmability package consists of a disk-based operating system, a FORTRAN-86 compiler, utility programs, a library of Low-level Interface (LTI) subroutines and an Intel 8087 numeric coprocessor. A local version of Tektronix's Interactive Graphics Library (IGL) and a macro-assembly language translator are also available.

All 4110 Series terminals are easily upgraded to Local Programmability. The recommended system configuration includes a minimum of 256K bytes of RAM.

For mass storage of system and application programs, the terminal needs either two flexible disk drives or one flexible disk drive and one Winchester Micro-hard-disk drive.

The user has the flexibility to run entire programs locally or to connect the terminal to a host system for more complex tasks. Though some applications, at least in part, require the "number crunching" and data base management of a mainframe computer, the terminal can still be used on a standalone basis for the pre-processing and post-processing of graphics information.

At its introduction, the package includes a version of the CP/M-86 operating system. Designed as a single-user, single-task system, CP/M-86 is easy to learn and to use. Though the 4110 Series terminals are not intended as CP/M-86 workstations, the user may benefit from the large base of existing CP/M-86 compatible software.

For further information, write to the Marketing Communications Dept., Mailing Station 63-635, Tektronix, Inc., P.O. Box 500, Beaverton, Oregon, 97077, or call toll-free 1-800-547-6711.

Microsystems Offers Four New Programs

Bowling League Secretary:
A series of programs to aid the Bowling Establishment, League Secretary and League Service Bureau to process league score data and produce ABC/WIBC required reports with league and player weekly statistics. Maintains averages, handicaps, high scores, money paid and name/address information. $49 for one league or $495 for multi-league processing.

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continued on page 13

Tektronix 4110 Series graphic terminals.

THE STRENGTH OF PASCAL STRUCTURES

PASCAL, a very powerful general purpose computer language, supports the standard features needed in data processing

by MICHAEL E. RICHERSON

WHAT IS PASCAL?

PASCAL is a computer language that has a logical structure and machine independence. It was designed by Nicklaus Wirth in 1970 to have a logical and systematic way of teaching the concepts of computer programming. Because of its advantageous features and success as an educational tool, it has gained a large following outside of the academic environment.

WHY USE PASCAL?

There are many reasons to use PASCAL. It has a structure that is easy to understand and modify. It allows a programmer to overcome problems inherent in older computer languages. FORTRAN and BASIC, for example, are not structured. They require the use of GOTO statements to implement most decision processes. When these GOTO statements are required, program logic is often difficult to follow making modifications very time consuming and error prone. PASCAL allows all decisions and loops to be coded without GOTO statements making each program segment easy to understand and, if necessary, to modify. With this attribute, PASCAL may be considered for a wide range of programming tasks. It is particularly suited for applications that need to be enhanced, modified and maintained over a long period of time. Its built-in, imposed discipline is conducive to a systematic approach and syntax makes an easy-to-read program. And, PASCAL supports all of the standard features needed in data processing: arithmetic, calculations, decisions, looping, input/output, record structures and a variety of data types.

Another reason for using PASCAL is that it has both computational power and record structures. FORTRAN and BASIC provide powerful computational features. But, they do not allow different types of data (such as numbers and characters) to be easily associated. With COBAL, record structures are gained but computational power is lost.

Other reasons for using PASCAL are: Compared to other computer languages, there is a wide range of documentation and training material available; and, in many cases, there are more choices of vendors and hardware available for its implementation (from desktop micros to very large-scale machines). This last fact can allow PASCAL programs to be very portable.

PASCAL STRUCTURE:

PASCAL supports the modern concepts of "structured programming". Its structure includes: an instruction set that is complete and flexible enough to avoid the use of GOTO statements, a readable syntax and user-defined data types. Also, it allows a program to be broken down into small logical blocks of code that are self documenting. The general structure of a PASCAL program is as follows:

```
PROGRAM name;
        declarations
        procedures and functions
BEGIN
        main program statements
END.
```

PASCAL contains the following standard data types: real, integer, character, string and boolean. Variables are declared in the following manner:

```
VAR name : type;
```

For example:

```
VAR X, Y : REAL;
    I,J : INTEGER;
    C1 : CHAR;
    TITLE : STRING;
    SWITCH : BOOLEAN;
```

PASCAL supports arrays in addition to simple variables. Array declarations contain both the dimensions and the data type of the array. The following form is used to declare arrays:

```
VAR name : ARRAY [dimension] of type;
```

For example:

```
VAR X : ARRAY [1..10] of REAL;
    LETTERS : ARRAY [0..5, 10..20] of CHAR;
    A123,BXYZ : ARRAY [6..10] of INTEGER;
```

PASCAL also supports user defined data types. These are declared using the following form:

```
TYPE name = allowed values ;
```

As an example:

```
TYPE WORKDAY = (MON, TUE, WED, THU, FRI);
VAR  DAY : WORKDAY;
```

PASCAL is named after the famous French mathematician Blaise Pascal.

The TYPE declaration is used for records as well as user defined data types. The record declaration is in the following form:

```
TYPE name = RECORD
      declarations
END;
```

For example an inventory record might be declared as follows:

```
TYPE INVREC = RECORD
      NAME : ARRAY (1..20) of CHAR;
      PARTNO : ARRAY (1..7) of CHAR;
      COST : REAL;
END;
```

The declaration section also may contain constants and labels. These are declared as follows:

```
CONST name = value;
LABEL name;
```

PASCAL instructions can be divided into four categories. These are assignment and calculation statements, input/output statements, decisions, and loops.

Assignment and calculations are coded in the following manner:

```
variable name := expression;
```

This form can be used to assign a constant value to a variable name such as:

```
X := 35.73;
```

The result of arithmetic operations can also be assigned. For example:

```
WEIGHT := MASS * 32.2;
```

Additionally, this form can be used to assign the results of logical operations. As an example:

```
SWITCH1 := (SWITCH2 AND SWITCH3) or SWITCH4;
```

PASCAL contains two input features. These are the READ and READLN statements. The input statements are coded in the following manner:

```
READ (fileid, V1, V2,..., Vn);
READLN (fileid, V1, V2,..., Vn);
```

The fileid identifies an input device or disk file. The parameters V1 through Vn are variable names. The READ instruction reads input records until all variables are assigned a value. The READLN instruction only searches for data values on the current input record.

Two similar output statements are supported. These are the WRITE and WRITELN statements. The output statements have the following form:

```
WRITE (fileid, V1, V2,..., Vn);
WRITELN (fileid, V1, V2,..., Vn);
```

The parameters are defined in the same way as in the input statements. However, an additional feature is available for the output variables. A variable can be specified in the form:

```
V : W : d
```

Where V is the variable name, W is the field width and d (in the case of REAL data) is the number of places to the right of the decimal point.

Decisions can be coded in two general forms. One form is the IF statement. The other form is the CASE statement. Both forms allow coding of completely structured decisions.

PASCAL contains two variations of the IF statement. The IF statement can be coded in an IF THEN form or an IF THEN ELSE form. The following syntax applies to these statements:

```
IF condition THEN expression;
IF condition THEN expression ELSE expression;
```

In the IF THEN form the expression is executed only when the condition is true. With the other form, the THEN expression is performed when the condition is true and the ELSE expression is performed when the condition is false.

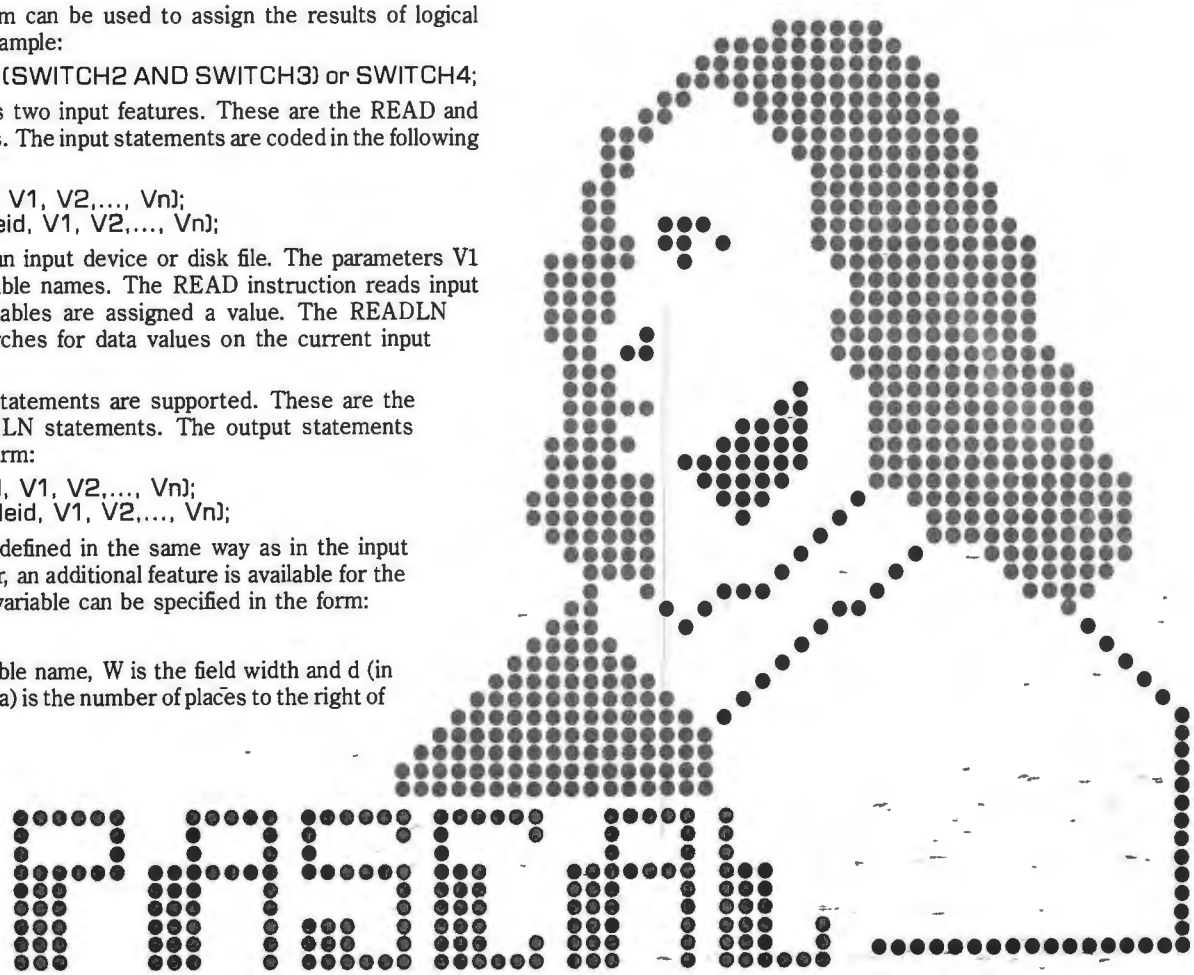
The CASE statement is used when a decision has more than two branches. It has the following form:

```
CASE expression OF
      label : statement;
      label : statement;
      :
      label : statement;
END;
```

When the expression equals a label the corresponding statement is executed.

PASCAL contains three loop structures. These are the FOR loop, WHILE DO and REPEAT UNTIL. The loop features allow easy programming of all common loops.

continued on page 8



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COMPUTER LINGUISTICS

The FOR loop allows the program to repeat a segment of code as the value of an index is incremented or decremented. This loop structure has two basic forms as shown below:

```
FOR index is lower limit TO upper limit DO
    statement;
FOR index is upper limit DOWN TO lower limit DO
    statement;
```

The WHILE DO loop repeats a segment of code while a condition is true. The condition is examined before each pass through the loop. It has the following form:

```
WHILE condition statement DO
    statement;
```

The REPEAT UNTIL is similar to the WHILE DO. The primary difference is the condition is checked at the end of each pass. It is coded in the following manner:

```
REPEAT
    statement
UNTIL condition;
```

PASCAL contain two basic features for modularizing programs. These are the PROCEDURE and the FUNCTION. The PROCEDURE is a separate module of code that can be called from the main program or another PROCEDURE. It is coded as follows:

```
PROCEDURE name (parameters);
    declarations
BEGIN
    statements
END;
```

The FUNCTION is a separate module of code called by including it on the left side of an assignment statement. It is coded in the following manner:

```
FUNCTION name (parameters);
    declarations
BEGIN
    statements
END;
```

CONCLUSIONS: PASCAL has the features to support a wide variety of programming applications. It is both a structured and modular language. It is available from several vendors and it is easy to use. For these reasons, PASCAL merits serious consideration when choosing a computer language. □

Editors Note: In an upcoming issue, there will be an article on "PASCAL Under CP/M" with several implementations of PASCAL reviewed.

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Retrievals

In an effort to provide meaningful information to our readers, this department will abstract articles from various publications which we feel are worthy of your attention. Realizing that it is not practical to read all of the computer oriented publications, we intend to inform you of articles we feel most fill the need of the CP/M Community.

A Replacement for CP/M SUBMIT
by DAVID E. CORTESI
Microsystems, May/June 1982; page 60

The article is best summarized by the following quote: The power of the SUBMIT and XSUB command in CP/M 2.2 are limited by problems in SUBMIT. A replacement for the SUBMIT command has been written in Pascal (Pascal/Z). It corrects two major shortcomings in the SUBMIT: the inability to submit an empty line, and the inability to submit lowercase characters. The program also demonstrates the internal operation of SUBMIT.

CP/M Disk Directory and Table Secrets
by A. KLOSSNER
Microsystems, May/June 1982; page 68

This article details the CP/M directory and disk format at the level required to write "directory related" programs. He explains the BDOS and BIOS calls that relate to the directory.

Hewlett-Packard's Model HP-87
by D. FLANAGAN
Interface Age, August 1982; page 94

A product review of HP's new "premiere" personal computer. This machine has a hypervisor allowing a 64K CP/M system to operate independently while some of the rest of it's 544K (max) memory is dedicated to another task.

CB-80 for CP/M
by ALAN R. MILLER
Interface Age, Sept 1982; page 35

The improvements in the new BASICS such as naming conventions and statement numbering are discussed. Most of article is a review of Digital Research's new compiled BASIC, CB-80. Speed appears to be the major advantage over CBASIC.

Semidisk, Software Tools, the BDOS Blues, Power and LISPS
by JERRY POURNELLE
BYTE, August 1982; page 342

It's not practical to try to abstract this column on software tools. Long and rambling, but full of valuable experience, information and opinion by a knowledgable computer user; much of it relating to software tools on CP/M.

The Top Contenders
by STAN MIASTKOWSKI
Popular Computing, August 1982; page 50

The article highlights the top twelve Personal Computers out of a field of about 65 Japanese manufacturers. Several are using the CP/M operating system.

Basis 108...An Alternative
by C. BONGERS/STAFF
Call A.P.P.L.E., August 1982; page 23

A detailed product review of a new personal computer that has both a 6502 and Z80 microprocessor. This enables the user to have access to both the Apple and CP/M library of programs.

Exec Digital Research
by AL TOMMERVIK
Softalk, July 1982; page 4

Mr. Tommervik traces the origins of Digital Research and CP/M, their management structure and product strategy.

Minimizing the Inconvenience of Compiled Languages Under CP/M
by LEONARD C. SCHWAB
Microsystems, May/June 1982; page 50

The author addresses the tedium involved in developing programs in a compiled language environment i.e., edit - compile - execute - edit - compile etc. etc. Several techniques and concepts concerning program discipline and procedures are introduced that will minimize the time flow and confusion.

A Useful CP/M Utility Program
by THOMAS W. CAGE
Microsystems, July/Aug 1982; page 52

An assembly listing of a program called GETFILE.COM is included in this article. The utility allows a CP/M user to load files starting at a specific memory location. Usage, options and defaults are included.

CP/M V2.2 Patches
Technical Support Group — Digital Research
Microsystems, July/Aug 1982; page 60

The article presents several patches to CP/M V2.2 using the optional blocking and deblocking algorithms listed in Appendix G of the CP/M Alteration Guide. Procedures and console dialog. Other patches for ASM, PIP and SUBMIT are included.

Cloning CP/M Disk Drives
by ANDREW KLOSSNER
Microsystems, Jul/Aug 1981; page 70

The author presents methods to modify a BIOS to provide "virtual" disk drives on a system with one real drive. Assembly patch provided.

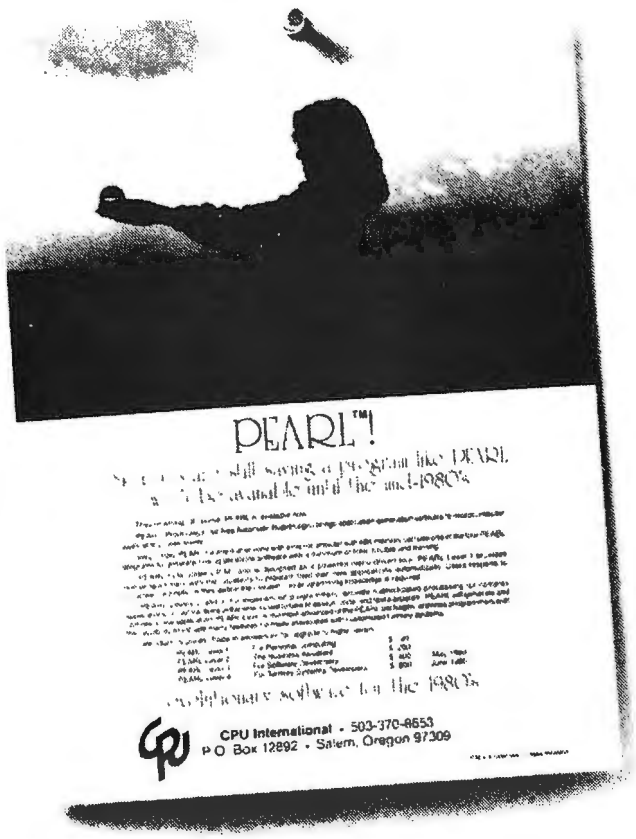
Finely-Tuned Basic Compiler
by J. LINDSAY
Microcomputing, August 1982; page 48

An analysis of Microsoft's new Basic Compiler BASCOM. The author points out the advantages of a compiled language that maintains compatibility with the convenient interpretive basics, MBASIC and BASIC-80. Compiler options are explained and the results of some simple benchmarks show speed increases of about two to one.

CP/M Exchange
by GENE HEAD
Dr. Dobb's Journal, July 1982; page 9

This is a new feature in Dr. Dobb's that contains short articles of service to the CP/M user. The Exchange Department will attempt to get specific

continued on page 23



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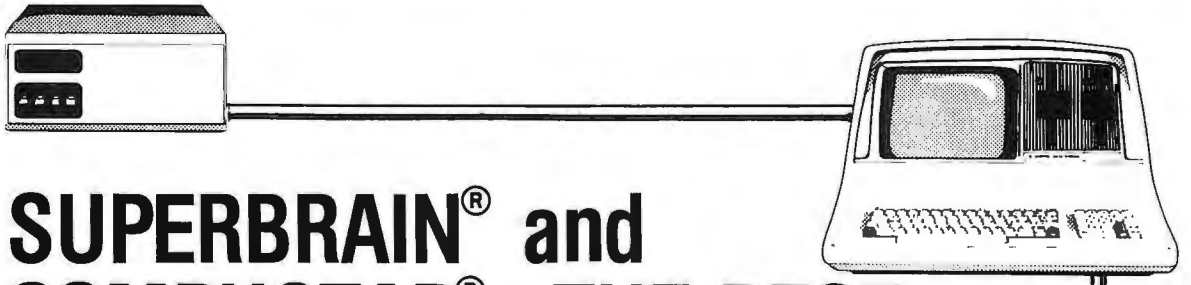

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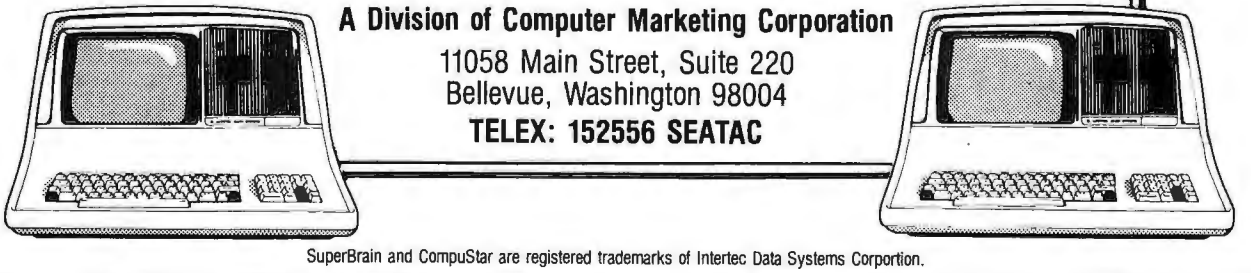

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New Publication for CP/M-based Osborne Computer Owners

"The Portable Companion", a new interest group magazine, premiered in July 1982.

The magazine is published by Osborne for its large community of CP/M-based Osborne computer owners. It will probably also be of interest to the owners of all those Osborne look-alikes that are beginning to hit the market. □

Information printed in the new product pages of CP/M REVIEW is obtained from "new product" or "press release" copy sent by promoters of new products. If in our judgment the information might be of interest to the CP/M community, we print it in some form. We openly solicit releases and photos from manufacturers and suppliers to this marketplace. While we would not knowingly print untrue or inaccurate data, or data from unreliable companies, our capacity to evaluate the products and companies appearing in "Random Access" is necessarily limited. We, therefore, cannot be responsible for product quality or company performance.

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What is it? Where can you find it?

One of the reasons for acquiring a personal computer with CP/M is for access to the large libraries of commercial and public domain software.

But, before we take up the question of where and how to obtain it, let's consider "What is it?" Public domain software may have a legal interpretation; however, to arrive at the most workable definition, first consider the spirit in which it is acquired. Most distributors are non-profit organizations that distribute software for private use with the caveat that it not be used for commercial purposes.

Public domain software is generally distributed as source code with an unwritten understanding of "use at your own risk." However, some public-minded person has put a lot of thought and effort into it so, even if the program doesn't do exactly what you want, it may be an excellent starting point.

SOURCES OF PUBLIC DOMAIN SOFTWARE

Commercial software is easy to find; the vendors are advertising, sending out catalogs and stocking their wares in computer stores. Public domain software is not so straight-forward. For example:

CP/M User Groups: There are two organizations that distribute large libraries of software: SIG/M and CP/MUG. SIG/M (Special Interest Group for Microcomputers) is part of the Amateur Computer Group of New Jersey. It is a non-profit organization dedicated to the distribution of public domain CP/M software. The work of gathering and distribution is done by unpaid volunteers.

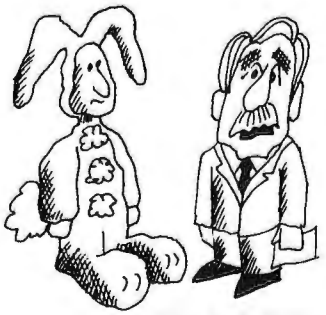
SIG/M has over 50 volumes of software that is primarily distributed through a network of affiliated clubs and user groups. There is a $1 donation expected when copies are made at meetings at these distribution points. To obtain a catalog of SIG/M software bank, write: SIG/M, Box 97, Iselin, NJ 08830. For $1.50, their catalog contains information on the distribution point nearest you.

CP/MUG is affiliated with Lifeboat Associates, a distributor of commercial software. CP/MUG works with CACHE (Chicago Area Computer Hobbyist Exchange) to compile and distribute software. CP/MUG has approximately 20 volumes of software. There is a catalog available from: Lifeline Publishing Corp., 1651 Third Ave., New York, NY 10028. The price is $6.

Both SIG/M and CP/MUG prefer to distribute through the club network. However, they have a direct service for individuals who are not close to a convenient distributor. Also, there are some distribution points available through communication links. (A column will be dedicated to this in an upcoming issue.)

continued on page 17

In The Public Domain will be a regular feature concerned with informing the reader on where and how to acquire public domain software.



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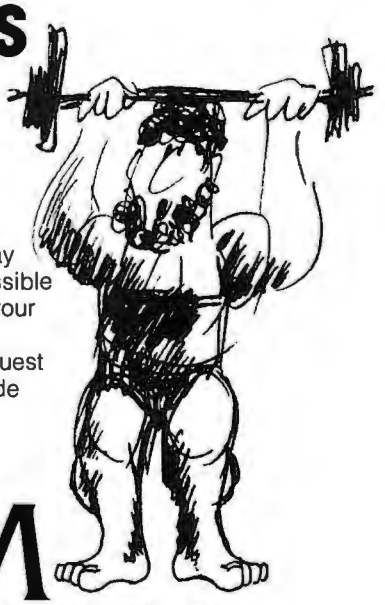

Our buyer's guide is a continuing project. If you manufacture any CP/M hardware, be it a complete system or a personality board, you may submit information for possible coverage by sending us your press release and sales literature. Or, you may request our hardware buyer's guide survey form.

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IN THE PUBLIC DOMAIN

Dartmouth College: The Kiewit Computation Center at Dartmouth College is another good source of software. Being the birthplace of BASIC and pioneering center in the use of timesharing, it has a public library of over 500 BASIC programs that a user can list from the college timesharing system. The price is $3/hour for connect time via local telephone at Hanover, NH, or $9.25 via Telenet. There is a Computer Resource Unit (CRU) charge, if you do any computing, and disk storage charge for storing files. However, for listing programs, only the connect charge applies. (Note: at 300 baud, one can list 36,000 characters in an hour.)

The rules are about the same as for clubs, no commercial use. To obtain an account, write to: Mr. Eugene A. Fucci, Assistant Director, Kiewit Computational Center, Hanover, NH 03755. These programs are not CP/M based. However, BASIC conversions are never very difficult. The Directory is on-line so one has to have an account to see what is there. CP/M REVIEW is attempting to get permission to print this directory in a future issue.

The U.S. Government (COSMIC): Many programs developed under government contract are in the public domain. Their directory, the COSMIC Catalogue, will quite likely be found at any major library in microfiche form. Ask for it at the technical reference desk or write to: COSMIC, University of Georgia, 112 Barrow Hall, Athens, GA 30602. COSMIC programs are generally COBOL or FORTRAN and developed on big machinery. However, this bears watching because the government also has discovered micros. There may not be any restrictions on usage. In fact, some COSMIC programs have been improved, documented and sold commercially. □

Note to readers: Letters and comments are invited. In particular, we would like to be apprised of any repositories of public domain software. Write to: CP/M REVIEW, 2711 76th Avenue Southeast, Mercer Island, WA 98040, Attn: Public Domain Editor.

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FILE TERMINOLOGY

Definitions to review. Increase your word power on specific usage.

DATA
A term used to denote a fact represented by a number, letter or symbol.

FIELD
An area allocated on a storage media to contain data. For example, if the first 10 character spaces on a line are reserved for the date, then they are the date field. The date can be placed anywhere in this date field — say you use the first 8 character spaces to enter 10/10/79.

RECORD
A collection of fields, generally containing related information. A record in a mailing list might contain fields for: name, address, state, zip.

DATA SET
A collection of records.

FILE
A collection of data sets. A file may contain records of different formats.

FILE ACCESS METHOD
The technique used to locate records for update or reporting.

SEQUENTIAL ACCESS
A simple access method where records are retrieved one-after-another. Usually there is some minimum control such as positioning at the beginning or end of the file.

INDEX SEQUENTIAL ACCESS
A method of access that combines the properties of the previous two methods. The file is organized such that it can be searched sequentially or accessed out-of-sequence. The out-of-sequence search is accomplished by first searching a directory of keys (such as social security number) to locate the address or the required record.

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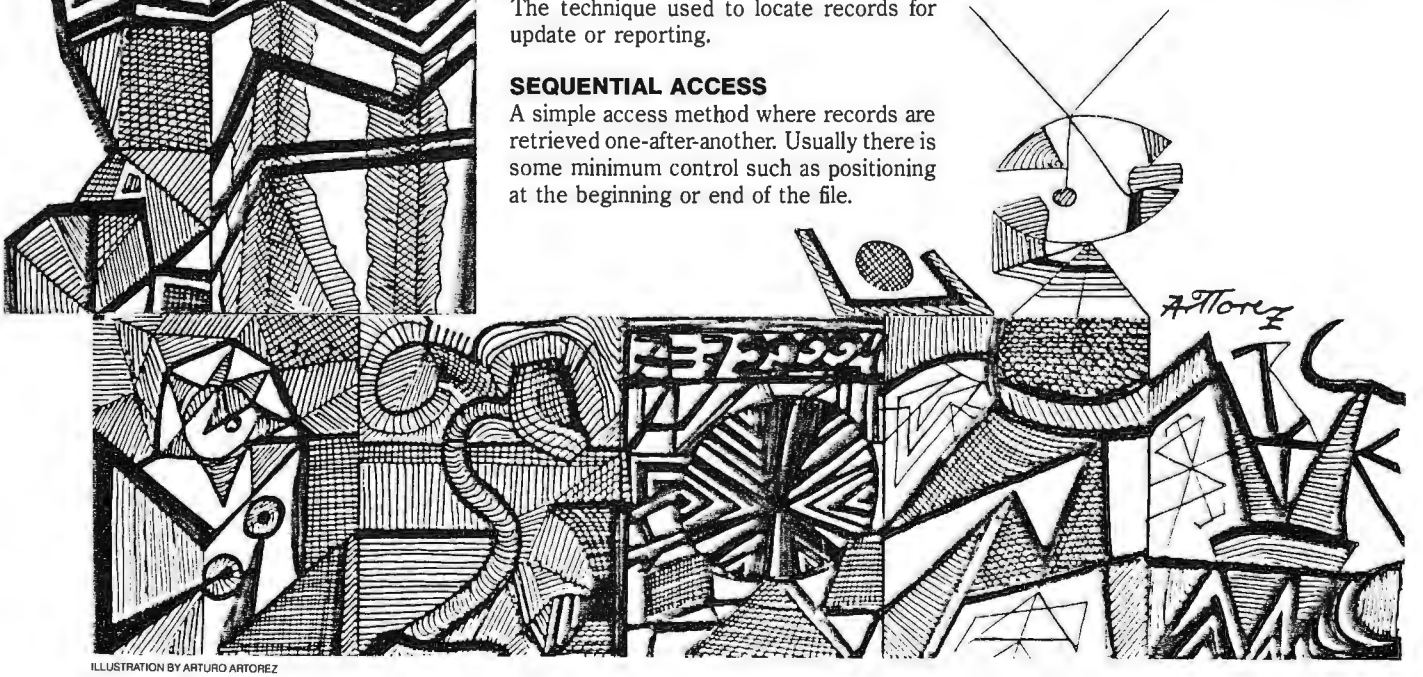

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Montgomeryville, PA 18936
Telephone: (215) 628-4810
Telex: 849416 DBS MMLL

TurbaDOS™ is a trademark of Software 2000, Inc. and is CP/M compatible.
CP/M® is a registered trademark of Digital Research Corp.

ILLUSTRATION BY ARTURO ARTOREZ

Software Nightmare

by ROGER W. BURKE

Roger W. Burke

If Shakespeare were alive today, instead of writing soliloquies about his mother and the king, he might write, "To deduct software costs or not to deduct software costs, that is the question. Whether tis nobler to suffer the slings and arrows of taking all of the expense in the current period, or to capitalize them over a minimum of five years, that is the question! To deduct or not to deduct, oh what impact that might have in future periods? For the Commissioner will not let you tarry through the fields, deducting in one year and capitalizing in another year, because of the regulations. Ah, the regulations, that's the rub."

Software costs are truly a rub for most businessmen. The IRS says that software in many respects so closely resembles research and experimental expenditures that they fall within a very special part of the Internal Revenue Code, Section 174. Generally, Section 174 says that you have a choice on how to handle the expenses on your tax return; you can deduct them when incurred, or you can amortize them over a minimum period of 60 months. The problem, is that like marriage, once you say, "I do", the only way to change your mind is to ask the court's permission. Once you have established a method of either expensing or capitalizing the software costs, you *must* receive permission from the IRS Commissioner before you can change to the other method.

Unfortunately, the rules and regulations that the IRS set up can easily trip you into a rather nasty penalty situation because you change the method of handling your software costs without knowing it. Specifically, you should keep your eyes open when you buy hardware. Often included in the cost of hardware are software programs. If you have previously been expensing your software costs, you should break the software costs associated with the hardware out and expense them in the current period. Conversely, if you have been capitalizing software costs, you should capitalize the software costs associated with the hardware.

The tripwire often lays in the first time hardware purchaser. The person buys the hardware that has software associated within it, capitalizes the entire bundle of costs, and effectively selects a tax policy without his knowing that he must capitalize *all* future software additions. Then as he buys additional software, he starts expensing them. The IRS comes in and does an audit, finds that software costs with the initial hardware were capitalized and that subsequent software costs were expensed, assesses penalties and fines, and sends the person "back to go" without collecting $200. It can be a very expensive lesson.

If you find that you have inadvertently selected a method of handling software costs that is inconsistent with your goals, all is not lost. Revenue Ruling 71-248 says that if you want to change the method of treating software costs, all you have to do is write. The IRS says that if you write to the Commissioner of Internal Revenue, Attention: T.I., Washington, D.C., 20024, telling them (1) the year in which you want to change methods, (2) whether the change applies to all software costs or only to specific expenditures attributable to a particular project, (3) include the information necessary to identify which projects you want to have the change applicable to, (4) indicate the number of months you want to amortize the costs, if any, (5) state that, "upon approval of the application, the taxpayer will make an accounting segregation on his books and records of software costs to which the change will apply, and finally, (6) state the reason why you want to change. Generally, the Commissioner will say, "OK".

So tonight, sleep, dream and in those dreams deduct or capitalize software costs, but select only one. Because if you start changing methods without the Commissioner's consent, you may byte off more than you can chew. □

Mr. Burke is a Certified Public Accountant, lecturer and columnist in the Pacific Northwest.
Copyright © 1982, Roger W. Burke, 811 E. Burnside, Suite 224, Portland, OR 97214.

The Solution

The Easy to Handle Program Writer For Non Programmers

AN OVERVIEW —

With computer hardware costs dropping to the level where almost every department and every small business can readily afford the investment, it is ironic that the cost of programming these computers is escalating so rapidly. The answer to the problem is to allow the user to write his own programs in a non-technical language.

The Solution is a plain-English programming language that enables the user to convert his ideas and application problems into operating programs without learning the intricate art of programming. Furthermore, structural errors usually encountered in normal programming are totally eliminated with **The Solution.**

Through the use of constant on-screen guides, explanations and plain-English prompting, **The Solution** walks the user through the various steps required to create his program. While there is virtually no limit to the type or complexity of programs that can be created using **The Solution,** the following categories outline the more frequently used applications.

ORDER ENTRY —

Like the accounting modules, **The Solution** allows the user to easily structure a program tailored to the specific needs of his particular company. An incoming order or inquiry can automatically poll or interact with credit, purchasing, inventory, shop scheduling, shipping or others. A program can be created by modifying a sample program that is provided, or a custom one can be structured using **The Solution.**

SCHEDULING —

Creating, and maintaining, schedules with **The Solution** uses the modeling matrix concept and applies appropriate tests to each column based on machine or department capacities. By "what if . . ." modeling, it is easy to experiment with the impact of overtime or run-size changes on the overall schedule. **The Solution** makes an easy task of any type schedule from project management (pert) to intricate job shops.

PUCHASING/INVENTORY CONTROL —

Internal procedures used in purchasing, expediting, back-ordering and inventory control vary widely from company to company. **The Solution** is therefore ideal because it allows the user to structure each element as best suits his needs in those areas.

SALES & MARKETING ADMINISTRATION —

Whether for sales forecasts, budgets compared to actual costs or tabulation of commissions (chargebacks, etc.), there is no better or easier way of quickly developing a custom program for your company than **The Solution.** It eliminates having to teach a programmer how your business is unique, what information is needed and in what format.

LISTS (MAILING, CUSTOMER, ETC.) —

The creation of simple data bases such as mailing lists or customer lists is accomplished easily by defining how many fields of information are wanted, the size or length of each, and how each record is to be accessed later. If a list is developed using the client's name (alphabetically) for access and later it is desired to sort and access the list by zip code, **The Solution** facilitates an easy conversion without disturbing the original data.

FINANCIAL MODELING —

The Solution enables the user to structure his own "what if . . ." matrix to develop electronic spread sheets for various types of projections and budget analyses. The user is able to define each row and column, as well as their relationships to other rows and columns. There is no limit to the number of matrices the user can create and it is simple to have interaction of data from one matrix to another. Among other possibilities, this feature enables the budget projections of various departments (such as branch sales offices) to interact with each other.

ACCOUNTING —

Although there is no shortage of standard accounting software packages, many businesses find that their needs don't fit the mold required for a standard software package. These businesses can readily utilize the ease and flexibility of **The Solution.**

USER LIBRARY —

To minimize users of **The Solution** having to recreate what has already been done elsewhere, LICO will periodically publish a directory of program descriptions submitted by **Solution** users willing to share their programs. Because the LICO language is portable, all programs will be fully compatible regardless of the brand of computer they were developed on. For a nominal annual fee, the user can have access to many other programs written by executives rather than programmers.

SPECIFICATIONS

- CP/M operating system required
- 48K RAM
- Recommended two floppy disk drives
- CRT with 80 x 20 character format supporting direct curser addressing

BY LICO ASSOCIATES

A DAGAR Affiliated Company

123 York Street
Crown Towers — Suite 2H
New Haven, CT 06510
(203) 624-0500

answers to user questions by putting one in touch with the right person or by publishing comments and/or questions in the column and soliciting reader response.
A valuable service.

V2.2 Application Notes

Technical Support Group — Digital Research
Microsystems, July/Aug 1982; page 64

A series of application notes on the following:

Use of the CCP after an autoload.

Redefining the backspace and rubout functions.

Using serial devices with X-ON/X-OFF protocol.

Use of the Control S scrolling function.

Changing lines per page in ED.COM

Changing restart number in DDT.COM

Nesting SUBMIT.COM files

A patch for MOVCPM.COM for 256 byte page boundries. □

DATABASE

DB.BAS is a general file maintenance program which can be used to file and maintain various types of data on disk. Variable length field names and data, up to 15 fields per record, and sorted index files can be made of any field. Prints Horizontal, Vertical, or Mailing label formats. Reports can be written to disk, user programs can be called from the menus, and files can be appended. Requires 40K CP/M® *, CBASIC-2. Program and manual $50. Source listing add $49. Source on disk add $49. Shipping $2. CA Res add 6%.

HOLLIDAY SOFTWARE
4807 Arlene Street
San Diego, CA 92117

*CP/M is a registered trademark of Digital Research

S-100 USERS

CP/M SOFTWARE FOR

FAST NUMBER-CRUNCHING

AND **9-TRACK MAG TAPE**

FOR USE WITH SPC TECHNOLOGIES'

FMP Fast Math Processor

DTI DMA Tape-Unit Interface

For further information contact:

A MEMBER OF THE SPC GROUP

SPC TECHNOLOGIES, INC.
P.O. Box 248, Arlington, VA 22210
(703) 841-3632

CP/M REVIEW BUYER'S GUIDE

This first installment contains information and photographs on thirty-five systems.

There are over 200 CP/M systems now in the marketplace. Thirty-five are reviewed in this first installment of the CP/M Review Buyer's Guide. And, additional installments will be issued as survey forms are processed.

Consider this guide to be a starting point in selecting a computer. For detailed information, contact the manufacturers. All have excellent sales literature and helpful telephone sales support. We have provided their addresses and phone numbers for follow-up.

The following comments are to assist you in using the guide:

ORIENTATION

While most systems are classified general purpose, some are targeted for certain market sectors (a manufacturing environment, typesetting, etc.). This category may aid you in quickly finding the specific systems particularly suited to your needs.

MASS STORAGE OPTIONS

Many users underestimate their disk storage requirements and do not understand the implications of adding a hard disk. Make sure the system you are considering has ample expansion to at least twice your current estimate. And, note that some systems represented prefer to deliver with a Winchester as standard equipment. Winchester disks with 5 megabytes or more are becoming available and inexpensive. But, the cost and technical aspects of adding them later may be prohibitive.

CP/M is a registered trademark of Digital Research, Inc.

INSTALLMENT NUMBER 1

DISPLAY CONSOLE

There are many pros and cons to the component approach versus the integrated package. The component approach does allow flexibility in selection of equipment. However, the integrated package generally requires less space.

For those interested in the component approach, note that many CP/M systems provide only the computer and disk. It's up to you to select a keyboard and CRT. Also note that there are numerous terminals with various video attributes (green phosphor, 80 columns, etc.). Again, you have the opportunity to select what best suits your needs.

OTHER I/O SUPPORT

Adding peripheral devices often requires external connectors and sometimes an additional electronic component (or slot) in the computer chassis. If the initial configuration is not large enough, adding chassis, power supply, electronics and connectors can be more expensive than buying a larger computer in the first place.

SALES AND SERVICE

Although most microcomputers are very reliable, if there isn't local service, a round-trip to the nearest regional repair center may take 10 days or more.

PRICE

In most cases, the price quoted in this guide is based on the standard usable configuration of CPU with 64KB memory, 2 floppy disks, keyboard and display and CP/M. However, when doing price comparisons, note that: 1) Some manufacturers do not provide the keyboard and display. Therefore, you should add about $600 for a typical display device. 2) Some manufacturers offer more than our standard configuration (i.e. 256KB memory or extra software) and bundle it into their price. These cases also require special consideration. □

CONTENTS

PRODUCT AND MANUFACTURER	PAGE
Archives Model III ARCHIVES INCORPORATED	26
ARCmicro ARC AUTOMATION GROUP, INC.	27
Blackhawk III BLACKHAWK COMPUTERS	28
Callan CD100M CALLAN DATA SYSTEMS	29
Campbell C2000 Microcomputer CAMPBELL SCIENTIFIC, INC.	30
Chromatics CG Series CHROMATICS, INC.	31
Colonial Model SB-80 COLONIAL DATA SYSTEMS	32
Compal 8200 COMPAL COMPUTER CENTER	33
CompuPro System 816/A COMPUPRO SYSTEMS	34
Copy Control III TERMINAL SYSTEMS CORPORATION	35
CPT Model 8525 CPT CORPORATION	36
Direct OA1000 DIRECT INCORPORATED	37
Discovery Multiprocessor ACTION COMPUTER ENTERPRISE, INC.	38
Diskstor-M COMARK CORPORATION	39
Durango F-85 DURANGO SYSTEMS, INC.	40
Eagle II EAGLE COMPUTER, INC.	41
G&G System 205 G&G ENGINEERING	42
Hewlett-Packard HP-87 Personal Computer HEWLETT-PACKARD, INC.	43
IMS 5000SX IMS INTERNATIONAL	44
Ithaca 525 THACA INTERSYSTEMS, INC.	45
Lobo Max-80 LOBO DRIVES INTERNATIONAL	46
Mariner MICROMATION, INC.	47
M/A Masterkey 230 M/A COM OFFICE SYSTEMS, INC.	48
Monarch System DYNABYTE BUSINESS COMPUTERS	49
Multi-Tech Systems MT500 MULTI-TECH SYSTEMS, INC.	50
NEC PC-8000 NEC HOME ELECTRONICS	51
Osborne 1 OSBORNE COMPUTER COMPANY	52
Otrona Attache OTRONA CORPORATION	53
Quasar QDP-100 System QUASAR DATA PRODUCTS	54
Rair Black Box RAIR LTD.	55
R2E of America Model XP/1 R2E OF AMERICA	56
Sanyo Model MBC-1000 SANYO BUSINESS SYSTEMS CORPORATION	57
Sundance I ONYX SYSTEMS, INC.	58
Supermicro 8 MOLECULAR COMPUTER	59
Zendex Model 935 ZENDEX CORPORATION	60

CP/M REVIEW

THE PUBLICATION FOR THE CP/M COMMUNITY

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BUYER'S GUIDE

Published by CP/M REVIEW Company,
2711 76th Avenue Southeast, Mercer Island,
Washington 98040. Telephone: 206 232-6719.
Office hours: Monday through Friday,
8:30 AM to 4:30 PM, Pacific time.

HARDWARE VENDORS:

Our buyer's guide is a continuing project. If you manufacture any CP/M hardware, be it a complete system or a personality board, you may submit information for possible coverage by sending us your press release and sales literature. Or, you may request our hardware buyer's guide survey form.

Archives Model III

A strong emphasis on total hardware/software solutions for specific industries or professions.

ORIENTATION

Word processing/data processing in a CP/M standalone microcomputer. Marketed to businessmen as well as professionals (legal, medical, dental, insurance). The legal market is the prime area being targeted presently.

MANUFACTURER

Archives Incorporated
404 West 35th Street
Davenport, IA 52806
319 386-7401 (Iowa only)
800 553-6950 (all others)

Established October 1978. Sale of Archives' products is through authorized dealers nationwide.

FIRST DELIVERED

December 1978.

PROCESSOR

Z80 CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" floppy Tandon drive and 1 5¼" Winchester, total storage 5.5+MB.

DISPLAY CONSOLE

12" green phosphor, non-glare screen. 25x80 characters, 240x100 graphics format, inverse video, blink and underline in any of eight intensities.

PRINTER INTERFACE SUPPORT

Can interface with most major brands of printers on the market today.

OTHER I/O SUPPORT

Modem — communications.

PACKAGING

Three slots available.
Detachable keyboard with microprocessor lefthand function cluster, righthand numeric cluster, 23 programmable function keys.

SALES AND SERVICE

Nearest dealer information:

319 386-7401 (Iowa only).
800 553-6950 (all others).

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and Display.
CP/M.

Price for the above:

$8,500.

Guarantee:

3 months.

System serviced by:

Authorized Archives dealers.

VENDOR STATEMENT

Aside from our quality and reliability, the Archives strongest feature is its capability to do both word processing and data processing in one desktop unit. For your money, the Archives is the most affordable business information system on the market today.

ARCmicro

This system employs a 3 Z80 system processor, disk processor and terminal processor and a 10MB Winchester is standard.

ORIENTATION

General purpose
business computing

MANUFACTURER

ARC Automation Group, Inc.
3001 E. ByPass
College Station, TX 77840
713 693-6122

From its beginning in 1963 as a service bureau for the insurance industry, ARC has grown to a multi-national holding company with several subsidiaries in vertical application markets. Annual sales for ARC Automation Group Inc. approaches $50 million.

FIRST DELIVERED

January 1982.

PROCESSOR

3 Z80A CPU.
128KB standard main memory.
256KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" Winchester with 10MB.
1 5¼" floppy with 1MB.
2 5¼" Winchesters with 10MB each.
2 5¼" floppies with 1MB each.

DISPLAY CONSOLE

Any RS232 ASCII CRT compatible.
DEC VT101 and VT100 are packaged and available through ARC.

PRINTER INTERFACE SUPPORT

Any serial RS232 device.
DEC printers are available through ARC.

OTHER I/O SUPPORT

A 2400 synchronous built-in modem is available.

PACKAGING

All models come standard with 6 serial ports and 1 parallel port. 2 of the serial ports have modem control. 1 of the serial ports can be made synchronous.

SALES AND SERVICE

Nearest dealer information:

713 693-6122

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

MP/M II.

Price for the above:

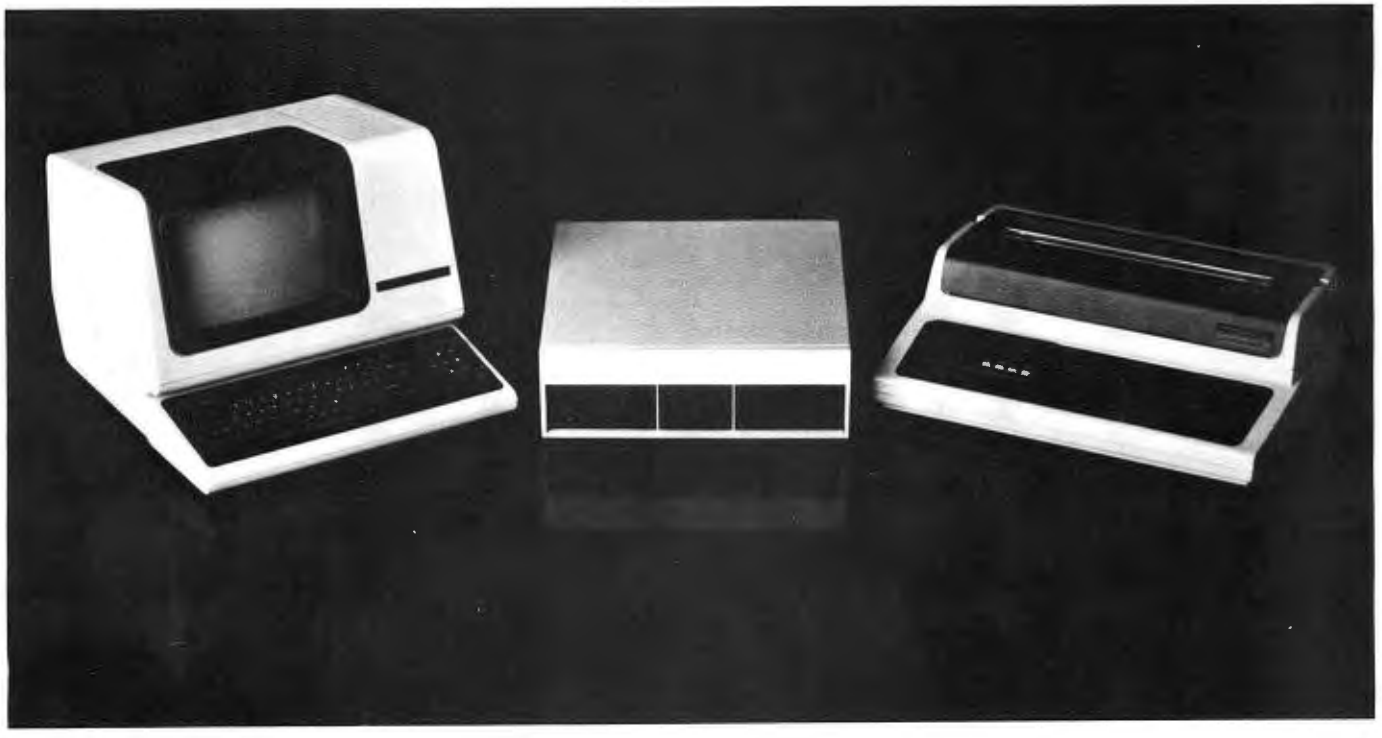
$7,600 + keyboard and display.

Guarantee:

6 months.

VENDOR STATEMENT

The ARCmicro was designed to be the first multi-user, MP/M system on the market. The hardware was specifically designed around the features of MP/M. The tri-processor design was used to facilitate increased throughput in a multi-user environment.



Blackhawk III

The Blackhawk III was specifically designed to meet the needs of the small business, professional and farming organizations.

ORIENTATION

General business and farm management.

MANUFACTURER

Blackhawk Computers
426 W. 2nd Street
Davenport, IA 52801
319 323-7857

FIRST DELIVERED

March 1979.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" 312KB floppies.
5MB Winchester.
26MB Winchester.

DISPLAY CONSOLE

12" CRT, green phosphor, 80x24 character format, reverse video.

PRINTER INTERFACE SUPPORT

A standard RS232 serial interface port is provided.

OTHER I/O SUPPORT

S-100 bus.

PACKAGING

Integrated CPU, CRT and disk with detachable Hall effect keyboard.

SALES AND SERVICE

Nearest dealer information:

319 323-7857

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

Accounting package.

Price for the above:

$4,495.

Guarantee:

3 months.

System serviced by:

Dealer and factory.

VENDOR STATEMENT

The Blackhawk III was designed to take the worry out of owning your first small business computer. You can be assured of obtaining the most cost-effective combination of computer hardware and software available — a totally integrated system that's designed to solve the problems of your particular business or profession.

Callan CD100M

This computer has 2 million bytes on 2 internal 5-1/4" floppies.

ORIENTATION

OEM product primarily geared for scientific/industrial applications, but not limited to this. Also suitable for business applications using industry standard CP/M package.

MANUFACTURER

Callan Data Systems
2645 Townsgate Road
Westlake Village, CA 91361
805 497-6837

Established in 1980.
Sales of $2.75 million.
45 employees with 88 sales representatives worldwide.

FIRST DELIVERED

March 1981.

PROCESSOR

Z80B CPU.
65KB standard main memory.
65KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" floppy with .6MB or
2 5¼" floppies with 1.1MB total.
5¼" floppy and 5¼" Winchester with 5.6MB.
5¼" floppy and 5¼" Winchester with 10.6MB.

DISPLAY CONSOLE

25x80 display, 723x365 pixels.
Graphics controller available.
Upper and lower case, reverse, blinking and ½ intensity.

PRINTER INTERFACE SUPPORT

Either serial or parallel printers.

OTHER I/O SUPPORT

RS232, multibus slots available.

PACKAGING

6 slot multibus, 93 key detachable keyboard, 200 watt switching power supply.

SALES AND SERVICE

Nearest dealer information:

805 497-6837

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$6,685.

VENDOR STATEMENT

The Callan CD100 is a compact, desktop integrated work station, which includes a versatile intelligent terminal with advanced video features, a built-in card cage which holds a number of Intel multibus or DEC LS1-11 Q-bus cards, a high capacity switching power supply and as an option, 2 5¼" mini floppy disk drives, or 1 5¼" floppy and 1 5¼" Winchester.

Campbell C2000 Microcomputer

Capable of unattended control of remote data capture devices.

ORIENTATION

General purpose, data collection network controller.

MANUFACTURER

Campbell Scientific, Inc.
815 West 1800 North
Logan, UT 84321
801 753-2342

Established in 1974. 40 employees, $3 million annual sales. Market world-wide. Foreign sales representatives located in Canada, Australia, United Kingdom, South Africa, Sweden, Italy and Austria.

FIRST DELIVERED

1980.

PROCESSOR

Z80A CPU.
70KB standard main memory.
128KB maximum main memory.

MASS STORAGE OPTIONS

2 8" floppies with a total of 1.2MB.

DISPLAY CONSOLE

RS232 port provided for connection to CRT.

PRINTER INTERFACE SUPPORT

RS232 serial port.

OTHER I/O SUPPORT

Modem and telecommunications software to automatically dial up and interrogate CSI dataloggers.

PACKAGING

STD bus, 12 card slots.

SALES AND SERVICE

Nearest dealer information:

801 753-2342

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

Special software and hardware for interfacing to audio cassette. Well suited for interfacing with CSI manufactured dataloggers.

Price for the above:

$4,500 + keyboard and display.

Guarantee:

6 months.

System serviced by:

Factory.

VENDOR STATEMENT

The C2000's power supply provides uninterruptable power to the STD bus system and floppy disk drives with the addition of a 12V lead acid battery. Furthermore, the C2000 can be operated in an unattended mode when configured with the clock and auto power control option.

Chromatics CG Series

For the color fancier — high resolution and an enormous pallette.

ORIENTATION

High resolution color graphics for business graphics and process control applications.

MANUFACTURER

Chromatics, Inc.
2558 Mountain Industrial Blvd.
Tucker, GA 30084
800 241-9467

Founded in 1976. 8 direct sales offices and 10 manufacturer's reps domestically. Multiple international distributors and reps.

FIRST DELIVERED

1978.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

Up to 6 - 8" floppies with 256KB each, IBM single-side, single-density format.

DISPLAY CONSOLE

13", 15" or 19" high resolution CRT, 512x512 pixel resolution, 85x51 characters/line. Up to 16 displayable colors from a pallette of 16,777,216 colors.

PRINTER INTERFACE SUPPORT

1 RS232 and TTL port standard, expandable to 4. Special interfaces for Trilog Color Printer, Applicon Ink Jet Printer and XEROX 6500 CGP.

OTHER I/O SUPPORT

Light pen, digitizer tablet, PROM programmer, DMA output, 4 serial ports, 2 parallel ports, RGB video and camera interfaces.

PACKAGING

Integral packaging of CRT and computer. Floppy disk drives are separate.

SALES AND SERVICE

Nearest dealer information:

800 241-9467

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

Extended graphics software, CRTOS to control and draw graphics primitives, Source and assembled BIOS.

Price for the above:

$16,490.

Guarantee:

3 months.

System serviced by:

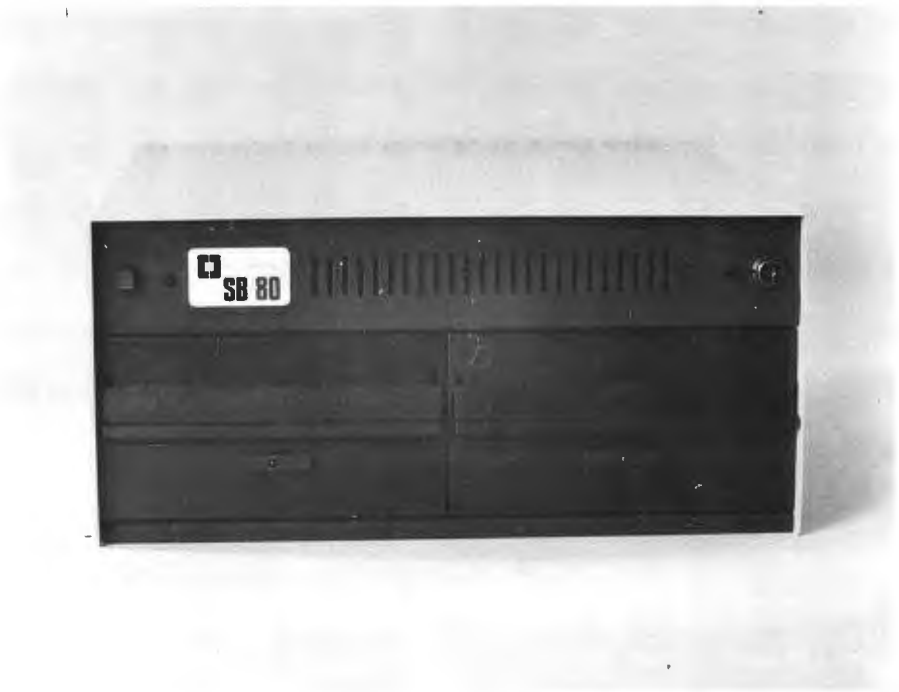
Regional.

VENDOR STATEMENT

The Chromatics CG Series is a low price, high performance color graphics computer. It can be used as a standalone computer with complete programming capabilities or may be connected to a host computer via serial or parallel ports. An impressive list of hardware and software options allows users to tailor a system to specific application requirements.

Colonial Model SB-80

A full-functioned single-board computer for business and home use.



ORIENTATION

A professional microcomputer for business and home.

MANUFACTURER

Colonial Data Systems
105 Sanford Street
Hamden, CT 06877
203 288-2524

Incorporated in 1980. Gross sales, 1981, over $900,000. Projected sales, 1982, $1.4 million. Sales through dealer/distributor network. Direct sales to major accounts.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" or 8" floppies with up to 2MB.
Winchester storage up to 104MB.

DISPLAY CONSOLE

Any 24x80 character CRT terminal such as Televideo or Adds.

PRINTER INTERFACE SUPPORT

Distribute Okidata and C-Itok printers. Normal configuration is parallel printer.

OTHER I/O SUPPORT

Z80A-S10 dual channel chip.
2 bidirectional serial ports.
2 Centronics parallel ports.

PACKAGING

SB-80 has 50 pin expansion bus for graphics interface, Winchester storage, additional serial ports, etc.

SALES AND SERVICE

Nearest dealer information:

203 288-2524

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$3,650.

Guarantee:

3 months.

System serviced by:

Third party maintenance (Indeserv) or our service department.
150 locations.

VENDOR STATEMENT

The SB-80 is a single-user CP/M microcomputer. Available with 2 5¼" drives 500KB or 2 8" drives with 1.2MB, 2 8" drives with 2.4MB plus Winchester storage starting at 10MB up to 104MB.

Compal 8200

An office automation product with mature software for many industry sectors.

ORIENTATION

Small business computer and word processing systems. Systems are typically used for word processing, data processing, accounting, communications, mailing, etc. Vertical market emphasis on legal, CPA, medical, distributor, advertising agency and writer applications.

MANUFACTURER

Compal
6300 Variel Avenue
Woodland Hills, CA 91367
213 992-4425

Compal was established in June 1976 to sell turnkey systems to the "first time" user market. Compal has 5 company owned outlets, and close to 1,000 business systems installed.

FIRST DELIVERED

November 1980.

PROCESSOR

Z80 CPU.
64KB standard main memory.
256KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 630KB each and 1 5¼" Winchester with 5MB.

DISPLAY CONSOLE

Black and white, green and black or amber and black 12" 24x80 character format CRT.

PRINTER INTERFACE SUPPORT

Serial or parallel interface, serial preferred. Either dot matrix or typewriter quality printers are available.

OTHER I/O SUPPORT

Up to 60 ports can be installed. System comes with 2 8 bit parallel output ports, 3 8 bit parallel input ports and 3 serial ports configurable in EIA RS232 format for communications or standard peripherals. RS422 and IEEE488 ports can be installed as well as RGB video since the system has up to 14 S-100 expansion slots.

PACKAGING

Up to 14 S-100 expansion slots. Detached keyboard with 10 key numeric pad. Optional designer desk, matrix printer.

SALES AND SERVICE

Nearest dealer information:

213 992-4425

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

Up to $1000 software included in base price.

Price for the above:

$5,795 to $8,995.

Guarantee:

3 months.

System serviced by:

Factory or service contract available.

VENDOR STATEMENT

Compal has over 6 years of success installing systems for first-time users. The company plans to double sales each year and expand to 25 company-owned and operated outlets in the continental U.S. within 5 years.

CompuPro System 816/A

This modular computer will run 8 or 16 bit processors and can be upgraded to a multi-user system.

ORIENTATION

General purpose.

MANUFACTURER

CompuPro
P.O. Box 2355 Oakland Airport
Oakland, CA 94614
415 562-0636

CompuPro has been selling S-100 boards since 1977. National distributor is Byte Industries.

FIRST DELIVERED

N/A.

PROCESSOR

8085 and 8088.
128KB standard main memory.
1MB maximum main memory.

MASS STORAGE OPTIONS

2 8" double-density, double-sided floppies totaling 2.4MB.
Expandable to 4.8MB.
Also expandable to 10, 20, 26MB hard disks, more to follow.

DISPLAY CONSOLE

Compatible with any terminal.

PRINTER INTERFACE SUPPORT

Centronics or serial printers are supported.

OTHER I/O SUPPORT

Serial ports for modem or other serial device are included.

PACKAGING

S-100 expansion capabilities.

SALES AND SERVICE

Nearest dealer information:

415 562-0636

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

dBase, Supercalc 86.

Price for the above:

$5,495 + keyboard and display.

Guarantee:

1 year.

System serviced by:

Factory.

VENDOR STATEMENT

The CompuPro family of system packages excel in high level business, industrial, and scientific computing environments. Simply add the terminal(s) and printer(s) of your choice, and you'll be up and running with one of the most advanced microcomputers available today. All systems run 8 and 16 bit software, and all single-user systems may be easily upgraded to multi-user operation.

Copy Control III

A computer tailored to the needs of the printing and publishing industry.

ORIENTATION

Printing and publishing.
Word processing.

MANUFACTURER

Terminal Systems Corporation
901 Columbia Circle
Merrimack, NH 03054
603 424-5033

Established February 1980.
Direct sales.

FIRST DELIVERED

June 1981.

PROCESSOR

Twin Z80A CPU.
64KB standard main memory.
256KB maximum main memory.

MASS STORAGE OPTIONS

1 or 2 5¼" floppies with 256KB each.
5MB Winchester and 1 5¼" floppy.
10MB Winchester and 1 5¼" floppy.

DISPLAY CONSOLE

12" diagonal, P31 green phosphor CRT, 80x24 character display.

PRINTER INTERFACE SUPPORT

4 ports: 1 parallel, 3 RS232 serial.

OTHER I/O SUPPORT

Modem: any baud rate to 9600.
1 parallel (Centronics) port.
3 RS232C serial ports.
Networking is supported.

PACKAGING

Keyboard detached (6 ft. cable).
64KB to 256KB internal at ordering time.
No expansion boards are used.

SALES AND SERVICE

Nearest dealer information:

603 424-5033.

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

WordStar customized to TSC keyboard.
Communications to user specifications.

Price for the above:

$4,590.

Guarantee:

6 months.

System serviced by:

Factory.

VENDOR STATEMENT

The Copy Control III is designed for "User Friendly", single keystroke operation.

SuperCalc, FormSequence, BASIC and other programs available.

Communications are also single keystroke to user specifications. Output programs to typesetter are available.

CPT Model 8525

A word processing system with CP/M and many options in an ergonomic display.

ORIENTATION

Word processing.

MANUFACTURER

CPT Corporation
P.O. Box 295
Minneapolis, MN 55440
612 937-8000

CPT was founded by Dean Scheff and Jim Wienhold in 1971, and was incorporated in 1972. In 11 years, CPT has grown from 2 employees to nearly 1,300 internationally. Revenues have increased from $73,000 in fiscal year 1972 to $145M for fiscal year 1982. CPT products are marketed throughout the U.S. by dealers in more than 600 cities and by international distributors located in more than 60 foreign countries.

FIRST DELIVERED

March 1979.

PROCESSOR

8080 CPU.
128KB standard main memory.
128KB maximum main memory.

MASS STORAGE OPTIONS

2 8" floppies with 315KB each.
Disk Unit 10 — 1 8" floppy with 315KB.
Disk Unit 20 — 2 8" floppies with 730KB.
Disk Unit 30 — 1 5¼" Winchester with 5MB.
Wordpak II — shared resource mass storage device containing 1 or 2 14" Winchesters with 24.8MB per disk.

DISPLAY CONSOLE

CRT; black characters on white background; non-glare screen; 54 lines x 80 characters; horizontal scroll is 240 characters — vertical is unlimited; CRT preview area.

PRINTER INTERFACE SUPPORT

CPT Rotary IV Printer — 45 CPS.
CPT Rotary V Printer — 40 CPS.
CPT Rotary VI Widetrack Printer — 40 CPS.
CPT Rotary VII Twintrack Printer — 45 CPS.
CPT Rotary VIII Printer — 45 CPS.
Interfaces are also available for IBM 50, 60, 75 and GE Terminet 510 printers.

OTHER I/O SUPPORT

Communications: TTY, 2780, 2770/3780.
CPT office dialog link: PBX type.
Local area network: 984 ports.
Wordpak II: 8 ports.

PACKAGING

Integrated CRT, CPU and disks with detachable keyboard.

SALES AND SERVICE

Nearest dealer information:

612 937-8000.

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M compatible (CompuPak).

Other software included:

Standard word processing.

Price for the above:

$8,625.

Guarantee:

3 months.

System serviced by:

Dealer.

VENDOR STATEMENT

The CPT 8500 Series word processors incorporate CPT's latest ergonomic design and research including full-page, black-on-white display screens, console tilt to minimize screen glare, and low profile and moveable keyboards. The 8500 Series models measure 18 inches from front to back and fit on a standard workstation.

The 8510, 8515, 8520 and 8525 are fully upgradable and are compatible with CPT's existing product line.

Direct OA1000

This system has extremely flexible video, high resolution, soft character, 132 column... and more.

ORIENTATION

Host oriented system providing local CP/M word and data processing, plus flexible communications and bi-directional data transfer with host computer. The OA1000 acts as a flexible intelligent terminal, standalone system or both simultaneously. Human engineering and innovative design result in a multipurpose device.

MANUFACTURER

Direct Incorporated
1279 Lawrence Station Road
Sunnyvale, CA 94086
408 734-5504

Established July 1978. First product shipped June 1980. More than 20 distributor locations throughout the U.S. and Canada. Direct is the only Hewlett-Packard compatible block mode terminal and workstation manufacturer in the world.

FIRST DELIVERED

September 1981.

PROCESSOR

Z80 CPU.
64KB standard main memory.
128KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 624KB.
Winchester option 1/83.

DISPLAY CONSOLE

P4 white or P31 green phosphor CRT.
80x24, 132x24 or 132x28 character format.
80 or 132 column display.
Font editing package allows display of user designed unique characters.

PRINTER INTERFACE SUPPORT

Serial RS232 bi-directional auxiliary port using DB25S connector.

OTHER I/O SUPPORT

Internal 300/1200 baud 212 type modem and Tektronix 4010 Plot-10 graphics options available.

PACKAGING

Integrated unit with fold-up detachable keyboard. Low profile design. Typewriter style keyboard. The unique case won a design award.

SALES AND SERVICE

Nearest dealer information:
408 734-5504

Standard system for price comparison:
CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:
Operator Help system included.

Price for the above:
$4,395.

Guarantee:
3 months.

System serviced by:
Distributor, factory and regional.

VENDOR STATEMENT

The DIRECT OA1000 is an integrated self-contained information station that utilizes dual Z80 processors. It has 128KB of RAM memory, a CP/M operating system and dual 5¼" floppy drives. The OA1000 can function as a video display terminal or as a computing system. Data may be transferred from the unit's disks to a host and vice versa. A range of terminal personalities are available. They are loaded from diskette into the OA1000's RAM memory.

Discovery Multiprocessor

A multi-user system with each user being provided his own CPU.

ORIENTATION

General purpose, multi-user, multi-processor S-100 microcomputer system which features both 8 bit Z80 and 16 bit 8086/8087 processors in the same system. May be used for word processing, business applications, data base management systems, scientific and engineering computations.

MANUFACTURER

Action Computer Enterprise, Inc.
55 West Del Mar Blvd.
Pasadena, CA 91105
231 793-2440

Established in March 1979.
Annual Sales of $4M. 50 domestic dealers, 25 international dealers.

FIRST DELIVERED

January 1980.

PROCESSOR

Z80 and 8086 CPU.
192KB standard main memory.
16MB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 800KB.
14" 33/66MB Winchester.
10½" 10MB fixed/10MB removable cartridge drive.
8" Winchester.
5¼" Winchester.

DISPLAY CONSOLE

RS232 terminals, 80x24 character display, graphics optional.

PRINTER INTERFACE SUPPORT

Centronics, RS232 serial.

OTHER I/O SUPPORT

Tape cartridge — ¼", 9 track tape — ½", modem, 8 channel high speed serial ports (RS422).

PACKAGING

Table top or rack mount.

SALES AND SERVICE

Nearest dealer information:

213 793-2440

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Price for the above:

$4,960 + keyboard and display.

Guarantee:

6 months.

System serviced by:

Dealer or factory.

VENDOR STATEMENT

The DISCOVERY is one of the first S-100 micro systems that is based on the architecture of multiprocessing. Each system can support up to 16 users. The users all have individual CPU and memory. The system allows intermixing of Z80 and 8086/8087 processors. Users run standard unmodified CP/M 80 or CP/M 86. The bus controlling, or Service Processor executes DPC/OS, Action's own high performance multiprocessing operating system. Multi-user facilities such as file lock and record locking, cross-submits, and interprocessor communications are supported.

Diskstor-M

Diskstor-M combines the industry standard Multibus hardware with Winchester disk technology.

ORIENTATION

General purpose.

MANUFACTURER

Comark Corporation
257 Crescent Street
Waltham, MA 02154
617 894-7000

Incorporated 1979. $2.5 million sales. Factory direct.

FIRST DELIVERED

October 1981.

PROCESSOR

8085 CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

1 8" floppy with 1MB.
1 5¼" Winchester with 18MB.

DISPLAY CONSOLE

Standard low cost ASCII terminal.

PRINTER INTERFACE SUPPORT

Centronics.

OTHER I/O SUPPORT

¼" cartridge tape,
½" IBM magnetic tape,
serial ports and parallel ports.

PACKAGING

Desk top, rack, work station mounting. 4/12 expansion slots, integrated disks, card (Multibus) file, power supply, communications panel, chassis and cast aluminum bezel.

SALES AND SERVICE

Nearest dealer information:

617 894-7000

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

ROM resident diagnostics.

Price for the above:

$7,100 + keyboard and display.

Guarantee:

3 months.

System serviced by:

Factory, module swap program.

VENDOR STATEMENT

Diskstor is available in an 8086 configuration with CP/M 86 at a slightly higher price.

Durango F-85

A fully integrated package, including the printer.

ORIENTATION

Integrated desktop data processing system designed for use in small businesses.

MANUFACTURER

Durango Systems, Inc.
3003 N. First Street
San Jose, CA 95134
408 946-5000

Durango Systems, Inc. was established in September 1977. The company introduced the F-85 in September 1978 and began shipment of production units in December 1978. The company has direct sales offices and an established network of 160 independent dealers to market the F-85 across the U.S. and international distributors worldwide.

FIRST DELIVERED

December 1978.

PROCESSOR

Intel 8085 CPU.
64KB standard main memory.
196KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" floppy with 1MB.
12 or 24MB fixed disk. Fixed disk system has a maximum size of 49MB. New 900 Series integrated 5¼" fixed disk of 7MB or 14MB. Auxiliary drive of 7 or 14MB available.

DISPLAY CONSOLE

9 inch diagonal CRT screen,
24x80 characters or 16x64 characters.
ASCII 94 symbol set. Line graphics.
Green phosphor color.

PRINTER INTERFACE SUPPORT

Integral printer, bi-directional printing at 165 CPS with upper/lower case. High resolution (9x9) dot matrix. Will accommodate forms from 3½" to 14⅞"

OTHER I/O SUPPORT

Supports EIA (RS232) single or multi-port, IEEE488.

PACKAGING

Integrated diskettes, fixed disks, video, keyboard and printer. Auxiliary diskettes and fixed disks available. Integrated system includes all options. No outside vendor supported slots.

SALES AND SERVICE

Nearest dealer information:

408 946-5000

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$8,475.

Guarantee:

90 days.

System serviced by:

Factory serviced, on-site maintenance contracts available.

VENDOR STATEMENT

The Durango F-85 desktop computer has integrated all of the necessary peripheral equipment and processor into a single product slightly larger than an electric typewriter. Its' portable, compact design weighs approximately 65 pounds.

The CP/M Operating System available for the Durango offers full support utilities, allowing you to take advantage of the wide range of application packages currently available on the market today, including general accounting, word processing, inventory control, job costing, property management, mailing lists, etc. Program in BASIC, FORTRAN, PASCAL, COBOL. Take advantage of complete CRT screen attributes such as reverse screen, blink, highlight, underscore, cursor control and programmable control of printer fonts.

Eagle II

A fully integrated desktop package with a fine business software complex included.

ORIENTATION

Eagle II is designed for the first-time small business computer use.

MANUFACTURER

Eagle Computer, Inc.
983 University Avenue
Los Gatos, CA 95030
408 395-5005

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 390KB each.

DISPLAY CONSOLE

12" CRT, P31 green phosphor, 80x24 characters.

PRINTER INTERFACE SUPPORT

1 Centronics, 2 serial.
1 additional parallel port.

OTHER I/O SUPPORT

2 RS232 serial ports,
1 parallel port.

PACKAGING

Self contained, lightweight, desktop unit; 75 key station, full numeric keypad, 32 special function keys.

SALES AND SERVICE

Nearest dealer information:

408 395-5005

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

Financial planner, word processor, and CBASIC.

Price for the above:

$2,995.

Guarantee:

90 days labor. 1 year parts.

System serviced by:

Dealer, factory and regional.

VENDOR STATEMENT

An Eagle computer is a self-contained, fully functional system. Reliable hardware and top-rated software are included in one easy-on-the-budget package.

G&G System 205

Definitely a multi-user system — capable of running 8 and 16 bit software at the same time.

ORIENTATION

General purpose hard disk based multi-user system. Up to 8 users can run both 8 and 16 bit CP/M software simultaneously. Ideal for word processing, data base management, spread sheets or accounting.

MANUFACTURER

G&G Engineering
1922 Republic Avenue
San Leandro, CA 94577
415 895-0798

Established in 1980.

FIRST DELIVERED

March 1982.

PROCESSOR

8085 and 8088 CPU.
256KB standard main memory.
1024KB maximum main memory.

MASS STORAGE OPTIONS

2 8" double-sided, double-density floppies with 2.4MB.
1 5¼" Winchester with 5MB.
8" Winchester with 20MB, 17MB tape backup.

DISPLAY CONSOLE

Any RS232 serial terminal.
Graphics option: 1224x240 graphics terminal with software. Drivers for X-Y plotter and dot matrix printer (e.g., Epson MX-80).

PRINTER INTERFACE SUPPORT

8 RS232 serial ports, 50 to 19.2K baud.
Optional: Centronics parallel port.

OTHER I/O SUPPORT

Hardware and software support for 300 or 1200 baud modem.

PACKAGING

Desk top or rack mount, IEEE696/S-100 bus, 20 slots.

SALES AND SERVICE

Nearest dealer information:

415 895-0798

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

CP/M 86, MP/M 86 with MP/M 8-16, dBASE II, SuperCalc 86, MBasic.

Price for the above:

$10,500 + keyboard and display.

Guarantee:

24 months.

System serviced by:

Factory.

VENDOR STATEMENT

The G&G Engineering system is the only microcomputer currently available capable of running both CP/M 80 and CP/M 86 software at the same time, while supporting up to 8 users on an assortment of hard disks (5¼", 8" and 14"). The ability to add high resolution graphics and tape backup further enhances this unique product.

Hewlett-Packard HP-87 Personal Computer

The HP-87 features fast CRT graphics and graphics plotters.

ORIENTATION

General purpose for managers and professionals.

MANUFACTURER

Hewlett-Packard
1010 N.E. Circle Blvd.
Corvallis, OR 97330
503-757-2000

PROCESSOR

HP CPU in native mode,
Z80 using CP/M module.
128KB standard main memory.
640KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 270KB each.

DISPLAY CONSOLE

Integrated full-width 80-column display with white phosphor.

Character format:

Alphanumeric — 80x24 or 16 line.
Graphics — 240x400 or 544 dots.
Character font: 5x7 dot matrix
Character set: 256 (set of 128 characters with and without inverse video).

PRINTER INTERFACE SUPPORT

HP-IB, serial, parallel and others.
Preferred printer: HP82905.

OTHER I/O SUPPORT

4 ports accept optional interfaces, modem, memory modules, CP/M module or ROM drawer. IEEE488, graphics tablet, graphics plotter.

PACKAGING

4 I/O slots with keyboard, CPU and integrated CRT. Can attach up to 14 peripherals (floppies, hard disks, plotters, printers, etc.) using one HP-IB card.

SALES AND SERVICE

Nearest dealer information:

800 547-3400. In Oregon, Alaska and Hawaii call 503 758-1010.

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$5,690.

Guarantee:

3 months.

System serviced by:

Various options: Dealer Repair Center serviced by HP at dealer's site for selected dealers; On-site contracts serviced by HP; Return to HP Service Center (more economical than on-site contracts).

VENDOR STATEMENT

If you need to do extensive programming, the HP-87 should be your choice. With the ability to expand to 608KB bytes of total memory, the HP-87 Personal Computer lets you run long, complex programs. The expandable memory also lets you prepare analyses and reports that reduce stacks of information to a workable form. Analyze those data-crunching problems you face every day with concise charts, tables and easy-to-read printouts of your notes and reports.

Whether you're a computer novice or an experienced programmer, you can learn to use the HP-87 quickly and easily. The alphanumeric keyboard is so similar to that of a typewriter that it's a snap to type statements and commands. With the 14 user-definable keys you can assign special functions and commands that make your HP-87 a truly *personal* computer.

IMS 5000SX

Room in the cabinet to add a Winchester and upgradable to multi-user.

ORIENTATION

Business applications and word processing.

MANUFACTURER

IMS International
2800 Lockheed Way
Carson City, NV 89701
702 883-7611

Company established in 1978.
160 domestic dealers and 35 international dealers.

FIRST DELIVERED

1981.

PROCESSOR

Z80A and Z80B CPU.
64KB standard main memory.
512KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" Winchester with 5-15MB.
2 5¼" floppies with up to 819KB each.

DISPLAY CONSOLE

AMPEX D81 and Televideo 950.
P31 green phosphor.

PRINTER INTERFACE SUPPORT

NEC 7700 and Okidata ML-82A and ML-83A.

OTHER I/O SUPPORT

16 serial and 2 parallel ports.

PACKAGING

3 slots available.
Tape backup stand-alone available.

SALES AND SERVICE

Nearest dealer information:

702 883-7611

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$4,800.

Guarantee:

24 months.

System serviced by:

Dealer and factory.

VENDOR STATEMENT

Our products are intended for all office automation applications.

Ithaca 525

Featuring a unique cache CP/M support for extremely fast execution.

ORIENTATION

General purpose. For business, scientific, development and educational.

MANUFACTURER

Ithaca InterSystems, Inc.
1650 Hanshaw Road
P.O. Box 91
Ithaca, NY 14850
607 257-0190

Company established in 1978.
Annual sales of $5M. 225 sales outlets.
C.E.O: Robert G. Kleine.
President: James H. Watson, Jr.
National Sales Manager: Ray D'Onofrio.

FIRST DELIVERED

April 1980.

PROCESSOR

Z80B CPU.
128KB standard main memory.
720KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 360KB each.
1 5¼" hard disk with 5MB.

DISPLAY CONSOLE

Supports any RS232 serial or parallel display.

PRINTER INTERFACE SUPPORT

Supports any RS232 serial or parallel printer.

OTHER I/O SUPPORT

VIO board has 2 serial and 2 parallel ports. SIO board has 6 serial ports. Systems I/O supports all RS232 terminals, printers, modems and tape.

PACKAGING

S-100 IEEE standard bus.
10 slot motherboard on 5¼".
Expansion capabilities: 5¼", 6 slots for memory, I/O, etc.

SALES AND SERVICE

Nearest dealer information:

607 257-0190

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

Pascal/Z and InterPak (utilities), CACHE BIOS.

Price for the above:

$6,000 + keyboard and display.

Guarantee:

3 months.

System serviced by:

Dealer, distributor, factory and third party.

VENDOR STATEMENT

Ithaca InterSystems manufactures a complete line of 8 and 16 bit micro-computers with 8 bit CP/M CACHE/BIOS single user and MP/M CACHE/XIOS multi-user systems that are 500% faster than non-CACHE systems.

Lobo Max-80

A built-in clock/calendar, disk controller and many other features are standard.

ORIENTATION

General purpose machine with either TRSDOS or CP/M.

MANUFACTURER

Lobo Drives International
358 S. Fairview Avenue
Goleta, CA 93117
800 235-1245
800 322-6103 (CA only)

Company in existance approximately 3 years.

FIRST DELIVERED

July 1982.

PROCESSOR

Z80B CPU.
64KB standard main memory.
128KB maximum main memory.

MASS STORAGE OPTIONS

Choice of 5¼" or 8" floppies.
5¼" or 8" Winchester available.
All interfaces are built-in.
5¼" floppies are 332KB each.

DISPLAY CONSOLE

Standard 24x80 video, plus TRS-80 16x64 and 16x32 modes — software selectable.
All 128 ASCII and 64 graphic characters are RAM-based and redefinable.
Green screen.

PRINTER INTERFACE SUPPORT

Serial or Centronics parallel.

OTHER I/O SUPPORT

2 RS232C serial ports with independent baud rates.
Centronics-type parallel port.
Buffered bus expansion connector.

PACKAGING

76-key professional keyboard with numeric pad and 4 function keys.
Real-time clock/calendar with self-charging backup battery, power supply and I/O connectors.
CRT and disks separate.

SALES AND SERVICE

Nearest dealer information:

Factory direct.
800 235-1245
800 322-6103 (CA only)

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

LDOS available for $69 additional.

Price for the above:

$1,660.

Guarantee:

12 months.

System serviced by:

Factory. Lobo will pay return freight if under warranty.

VENDOR STATEMENT

The Lobo Max-80 is an all-new design that incorporates the best features of popular microcomputers while eliminating the annoyances.

It features:
Bounce-free keyboard with U/L case and soft keys;
Built-in disk interfaces;
Multiple operating system;
Single compact case.

Mariner

A multiuser system with a processor board for each of eight users.

ORIENTATION

General purpose. Multi-tasking, multiprocessor master/slave system.

MANUFACTURER

Micromation, Inc.
1620 Montgomery
San Francisco, CA 94111
415 398-0289

PROCESSOR

Z80A CPU per user.
64KB + 64KB per user standard main memory.
576KB maximum main memory.

MASS STORAGE OPTIONS

8" floppy, 1-4 drives of .25-1MB each.
8" Winchester, 21MB.
8" Winchester, 42MB.
8" Winchester, 84MB.

DISPLAY CONSOLE

1-8 RS232 CRTS.

PRINTER INTERFACE SUPPORT

1 Centronics port, multiple ports.
(Number depends on system configuration).

OTHER I/O SUPPORT

S-100 bus compatible architecture.
Extra serial I/O ports optional.
Local serial I/O on slave processors.

PACKAGING

Free standing console.

SALES AND SERVICE

Nearest dealer information:
415 398-0289

Standard system for price comparison:
CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:
Call 415 398-0289, Sales Department.

Price for the above:
$6,450.

Guarantee:
6 months on electronics.
90 days on disks.

System serviced by:
TRW.

VENDOR STATEMENT

Benefiting from Micromation's M/NET concept, Mariner delivers bigger system performance in a multi-tasking environment while realizing the proven reliability and economies of 8-bit technology. CP/M compatibility lets you choose from a wide range of applications software.

If you're serious about using computers to help your business, contact us for the name of your nearest Micromation distributor. And, if you're a computer dealer that's serious about expanding your market coverage and customer base, be sure to inquire about our dealer support program.

M/A Masterkey 230

The Masterkey Series has both Z80 and 6502 CPU's.

ORIENTATION

Small business.

MANUFACTURER

M/A Com Office Systems, Inc.
7 Oak Park
Bedford, MA 01730
617 275-4440

Formerly Ohio Scientific, Inc.
which was established in 1975.
Now part of NYSE Corporation M/A-Com.
The personal computer division has
85,000 feet of floor space and
180 employees.

FIRST DELIVERED

April 1982.

PROCESSOR

Z80 or 6502 CPU.
56KB standard main memory.
344KB maximum main memory.

MASS STORAGE OPTIONS

1 8" floppy with 275KB.
1 8" hard disk with 10MB.
1 14" hard disk with 80MB.
230 Series up to 4 users.

DISPLAY CONSOLE

Standard 12" Hazeltine
or Digital VT100.

PRINTER INTERFACE SUPPORT

Centronics, Diablo, Serial.

OTHER I/O SUPPORT

Modem.

PACKAGING

Boxed-in desktop.

SALES AND SERVICE

Nearest dealer information:

617 275-4440

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

OS-65U with Microsoft BASIC.

Price for the above:

$5,740.

Guarantee:

3 months.

System serviced by:

Dealer and Factory.

VENDOR STATEMENT

The 230 Series microcomputer
is a desktop member of the
powerful and reliable M/A-COM OSI
keyfamily of computer systems.
The 230 Series systems, incorporating
M/A-COM OSI's unique dual-microprocessor
Central Processing Unit (CPU)
are offered in two models readily
adaptable to suit user needs.
All 230's are readily expandable to
4 time sharing users.

Monarch System

CP/M on an 8 bit machine running concurrently with MP/M 86 on a 16 bit machine.

ORIENTATION

General purpose multi-user business computer that concurrently processes both CP/M 80, MPM II with CP/M 86 and MP/M 86 to bridge the software gap.

MANUFACTURER

Dynabyte
521 Cottonwood Drive
Milpitas, CA 95035
408 263-1221

Established in 1977, first multi-user micro was shipped in 1979. Have doubled in sales every year since 1977. Dynabyte products are successfully operating in 50 states and 37 countries and are marketed worldwide.

FIRST DELIVERED

June 1982.

PROCESSOR

Z80B and 8086 CPU.
256KB standard main memory.
1000KB maximum main memory.

MASS STORAGE OPTIONS

1 8" floppy with 600KB.
1 5¼" 19MB Winchester.
Winchester capacity can expand to 200MB.

DISPLAY CONSOLE

CRT is optional. Any color, graphics, black and white, dumb, intelligent, etc., RS232 CRT will work.

PRINTER INTERFACE SUPPORT

Parallel port.

OTHER I/O SUPPORT

12 I/O ports standard.
Optional: 3 S-100 or multibus slots for expansion.

PACKAGING

Monarch weighs 42 pounds and is housed in a custom tabletop cabinet. Optional: Multibus or S-100 internal 3 slot card cage.

SALES AND SERVICE

Nearest dealer information:

800 538-3939

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$6,995 + keyboard and display.

Guarantee:

180 days.

System serviced by:

Dealer, factory and regional, plus third party — SORBUS.

VENDOR STATEMENT

The Dynabyte MONARCH microcomputer system provides true minicomputer performance. MONARCH supports from 1 to 16 users using a unique 16 bit/8 bit multi-processor architecture. MONARCH bridges the software gap between 8 bit and 16 bit processing by allowing concurrent operation. The system is capable of expanding up to 1 megabyte of memory and up to 76 megabytes of Winchester disk capacity.

Multi-Tech Systems MT500

Well known modem manufacturer branches into desktop computing.

ORIENTATION

The MT500 desktop computer is a general purpose microcomputer with special features which make it very powerful and flexible for word processing, etc. DMA display and 103 key keyboard with 32 programmable function keys.

MANUFACTURER

Multi-Tech Systems
82 Second Avenue S.E.
New Brighton, MN 55112
612 631-3550

Manufacturer of data communications and microcomputer equipment. Products include 300 bps acoustic couplers; modems, RS232 breakout boxes and CBT DAA couplers. The company manufactures a Z80A based desktop microcomputer system with built-in floppy or Winchester disk drive. 1981 sales totaled $3 million. The company employs 50 people.

FIRST DELIVERED

1981.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

MT500I: 1 5¼" floppy with 450KB.
MT500III: 2 5¼" floppies with 450KB each.
MT500IV: 2 5¼" floppies with 900KB each.
MT500V: 1 5¼" floppy with 900KB and 1 5¼" hard disk with 5MB.
MT500X: 1 5¼" floppy with 900KB and 1 5¼" hard disk with 10MB.

DISPLAY CONSOLE

Amber phosphor 80x24 character CRT. 8x8 resolution.

PRINTER INTERFACE SUPPORT

Centronics and serial RS232C.

OTHER I/O SUPPORT

Modems manufactured by Multi-Tech Systems: FM30, FM31, FM30AB, MT113C, MT113D, MT103J, MT201B and MT202T.

PACKAGING

The MT500 chasis integrates the CRT, computer, power supply and 2 5¼" disk drives into a single desk-top unit. The keyboard is detachable. The MT500 CPU board is a single printed circuit board with 4 S-100 expansion connectors.

SALES AND SERVICE

Nearest dealer information:

612 631-3550

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$5,245.

Guarantee:

3 months.

System serviced by:

Factory and distributor.

VENDOR STATEMENT

We feel that the MT500 offers the best price/performance combination available in its class. It utilizes a Z80A processor, 64KB memory and the CP/M operating system by Digital Research Corporation. The MT500's physical construction features a detachable keyboard and a steel desk-top enclosure which contains the complete computer, a 12 inch direct memory access CRT screen and the disk drives.

Other important features standard in the MT500 include: a high quality detachable keyboard, 103 keys including 31 programmable function keys; built-in single or dual 450KB or 900KB mini-floppy drives; optional built-in 5 or 10MB hard disk drives; 4 slot built-in S-100 bus for expansion; data and word processing capability; a wide variety of programming languages; cost effectiveness — list price beginning at $4295 for the base hardware.

NEC PC-8000

A strong entry from a major Japanese electronics manufacturer.

ORIENTATION

General purpose.

MANUFACTURER

NEC Home Electronics
1401 W. Estes
Elk Grove, IL 60007
312 228-5900

NEC was established in July 1899, with annual sales of $4.87 billion.

FIRST DELIVERED

1979.

PROCESSOR

Custom Z80A equivalent.
32KB standard main memory.
160KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 163KB per drive.

DISPLAY CONSOLE

High resolution 80x24 green phosphor 12" CRT, adjustable scrolling window.

PRINTER INTERFACE SUPPORT

Standard interface is Centronics, serial will be available.
NEC PC-8023A - 100 CPS, standard ASCII 96 characters, plus numerous Greek, math and graphics characters. Columns selectable between 48 and 136 per page.

OTHER I/O SUPPORT

Modem, serial and parallel ports, RGB monitors, cassette.

PACKAGING

Detached components, keyboard has upper/lower case, 248 character set, numeric keypad, control keys, screen editing function keys and 5 programmable function keys.

SALES AND SERVICE

Nearest dealer information:

800 323-1728

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M compatible.

Other software included:

Built-in Microsoft N-BASIC.

Price for the above:

$2,999.

Guarantee:

3 months.

System serviced by:

Authorized dealers, distributors or factory.

VENDOR STATEMENT

The major emphasis NEC has taken with the PC-8000 is one of total support. The system is designed and manufactured with very little downtime as a primary objective. The same quality standards apply to software selection. Before a software package is accepted as "NEC approved" it must undergo stringent programming and user evaluations. Finally, a nationwide sales, service and support system is available.

Osborne 1

Complete computer in a portable case that fits under an airplane seat.

ORIENTATION

General purpose computer for word processing, calculations and applications programming.

MANUFACTURER

Osborne Computer Company
26538 Danti Court
Hayward, CA 94545
415 887-8080

Osborne incorporated in January 1981. $10 million in sales by the end of 1981. 400 domestic dealers and 300 international dealers.

FIRST DELIVERED

July 1981.

PROCESSOR

Z80 CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 102KB each.

DISPLAY CONSOLE

5¼" black and white CRT, 52x24 characters with horizontal scrolling.

PRINTER INTERFACE SUPPORT

Centronics and serial.

OTHER I/O SUPPORT

Modem interface, IEEE488 interface, RS232 serial port, battery pack interface.

PACKAGING

Integral plastic case snaps together to form a weather-resistant, 24 pound package.

SALES AND SERVICE

Nearest dealer information:

415 887-8080

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

Wordstar, Supercalc, MBASIC and CBASIC.

Price for the above:

$1,795.

Guarantee:

3 months.

System serviced by:

Dealer.

VENDOR STATEMENT

The Osborne 1 Personal Business Computer was designed, built and priced with one objective: To make you more productive in your work, your business or your profession... now. The system is delivered with the hardware and software tools you need to go to work right away, on the jobs you do for hours every day.

Otrona Attache

Only 1/2 cubic foot and 18 pounds, this attache-sized computer has 720KB of floppy storage.

ORIENTATION

General purpose.

MANUFACTURER

Otrona Corporation
4755 Walnut Street
Boulder, CO 80301
303 444-8100

Otrona was founded in April 1977, for contract engineering. In 1981, contract engineering was discontinued to complete development of the ATTACHE portable computer. At present, annual sales can't be determined as shipment began in March 1982. We have approximately 50 sales outlets.

FIRST DELIVERED

March 1982.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies, double-sided, double-density with 360KB per drive.

DISPLAY CONSOLE

5½" diagonal green phosphor CRT, 80x24 columns, 320x240 graphics resolution.

PRINTER INTERFACE SUPPORT

RS232 serial, also RS422 and RS423. Parallel is optional.

OTHER I/O SUPPORT

1 RS232 serial communication port.
Optional: 1 IEEE488 interface.

PACKAGING

Portable 18 pound high performance computer system. 1 expansion slot.
Optional: DC converter, battery packs.

SALES AND SERVICE

Nearest dealer information:

303 444-8100

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Other software included:

Wordstar-Plus, Microsoft Basic-80, VALET and CHARTON.

Price for the above:

$3,995.

Guarantee:

90 days.

System serviced by:

Dealer.

VENDOR STATEMENT

ATTACHE by OTRONA was designed for applications that require portability or compactness. It is an entire computing system packaged in a rugged cabinet. For transport, the keyboard flips up to form a lid that protects the disk drives and CRT display. ATTACHE lets you achieve new levels of capability and flexibility.

Quasar QDP-100 System

Features a capability of offering online menu-style display of available programs and options for selection and execution.

ORIENTATION

Microcomputer system for business, engineering and professional applications.

MANUFACTURER

Quasar Data Products
10330 Brecksville Road
Brecksville, OH 44141
216 526-0838

Established in 1978. Products marketed through a network of 22 distributors in the U.S. as well as Canada (3), France (2), Great Britain and others internationally.

FIRST DELIVERED

May 1980.

PROCESSOR

Z80A CPU.
64KB standard main memory.
256KB maximum main memory.

MASS STORAGE OPTIONS

2 8" double-sided, double-density floppies for 2.4MB. Floppy drives support single density read/write/format option (IBM-3740). QDP-100H features 1 8" floppy and 1 5¼" or 8" hard disk (10MB or 15MB). Hard disk expansion units (HD-10 and HD-15) are also available.

DISPLAY CONSOLE

Easy terminal configuration. Full port interrupt and handshaking capabilities. 30 character serial port input buffer memory for high speed typing with no input command or data loss. In multi-user configuration, supports up to 4 terminals and 4 concurrent tasks.

PRINTER INTERFACE SUPPORT

Centronics compatible.

OTHER I/O SUPPORT

RS232 interface, 2 serial and 2 parallel ports, (1 Centronics compatible), up to 6 serial and 4 parallel ports for multi-user applications.

PACKAGING

Integral package with modular internal construction for ease of expansion and servicing. Front panel main power key and status indicators for disk drives. 2 switched, fused AC outlets for peripherals. Quiet, filtered cooling system and noise filtered heavy duty power supply. Uninterruptable power supply option available. 6 slot motherboard with 3 expansion slots in a typical system.

SALES AND SERVICE

Nearest dealer information:

216 526-0838

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Other software included:

CBASIC language.

Price for the above:

$4,695 + keyboard & display.

Guarantee:

12 months.

System serviced by:

The Installation and Service Engineering Division of General Electric Company.

VENDOR STATEMENT

The QDP-100 is supplied complete, for use with any popular terminal, with CP/M operating system or MP/M with the multi-user option.

Rair Black Box

One of the first computers to be delivered with Winchester drives.

ORIENTATION

General purpose.

MANUFACTURER

Rair
4101 Burton Drive
Santa Clara, CA 95050
408 988-1790

Company established in 1975. Designed and manufactured first computer in 1978. Shipped first Winchester disk system in 1980. Now producing a range of 6 computers ranging from 64KB twin floppy system with CP/M to 1MB RAM, 16MB disk system with MP/M II.

FIRST DELIVERED

1978.

PROCESSOR

Intel 8085 (various models).
256KB standard main memory.
1024KB maximum main memory.

MASS STORAGE OPTIONS

5¼" 500KB floppy.
5¼" 5MB formatted Winchester.
5¼" 16MB formatted Winchester.

DISPLAY CONSOLE

Any RS232 compatible display and keyboard.

PRINTER INTERFACE SUPPORT

Any RS232 compatible printer.

OTHER I/O SUPPORT

Up to 16 serial I/O ports (RS232) and IEEE488 bus.

PACKAGING

Integral disks, 8 internal slots, 2,4,8 or 16 serial I/O ports.

SALES AND SERVICE

Nearest dealer information:

408 988-1790

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
CP/M.

Price for the above:

$4,500 + keyboard and display.

Guarantee:

3 months.

System serviced by:

Factory and some Regional.

VENDOR STATEMENT

The RAIR Black Box model 3/30 is a general purpose system designed for applications in all areas of commercial and industrial data processing. It is ideally suited as a standalone single-user or multi-user computer systems with high capacity data storage.

R2E of America Model XP/1

An entry level system with a graceful upward growth pattern.

ORIENTATION

General purpose, word and text processing, data communications.

MANUFACTURER

R2E of America
2545 West County Road C
Roseville, MN 55113
612 638-5900

Subsidiary of Cii-Honeywell Bull Group of France.

FIRST DELIVERED

1979.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 5¼" floppies with 450KB each.

DISPLAY CONSOLE

12" amber anti-glare CRT, with reverse video, underscore and blinking character capabilities.

PRINTER INTERFACE SUPPORT

Centronics and RS232.
17, 40, 150 cps and 300 lpm printers supported (serial and parallel).

OTHER I/O SUPPORT

Serial and parallel ports.
3270 mode, 3780 communications.

PACKAGING

Keyboard has 128 character ASCII set, 14 key numeric keypad, 12 programmable function keys.

SALES AND SERVICE

Nearest dealer information:

612 638-5900

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$5,060.

Guarantee:

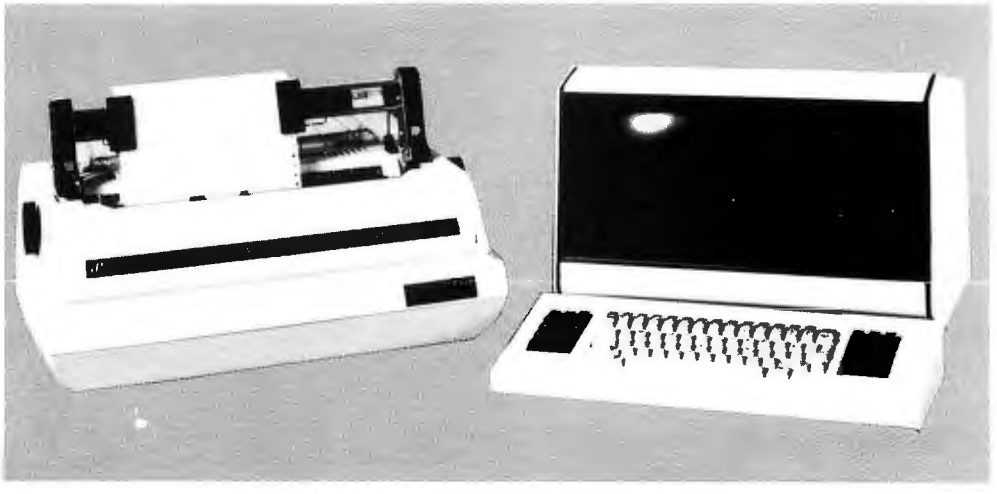
90 days.

System serviced by:

Factory or distributor by arrangement.

VENDOR STATEMENT

The XP/1 is an entry-level word processor, providing 900KB of minifloppy disk storage and an expanded sculptured style keyboard, in a white hammertone finish metal desktop cabinet.



Sanyo Model MBC-1000

Green phosphor, function keys, 320KB floppy and guaranteed for one year... at an interesting price.

ORIENTATION

General purpose.

MANUFACTURER

Sanyo Business Systems
51 Joseph Street
Moonachie, NJ 07074
201 440-9300

Sanyo is a well known conglomerate with international sales in excess of $8 billion.

FIRST DELIVERED

June 1982.

PROCESSOR

Z80 CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" floppy with 320KB.
Up to 4 floppies for 1.3MB, at the same time support 2 or 4 8" IBM disks.
Winchester 5, 10, 20, 60MB.

DISPLAY CONSOLE

12" green phosphor CRT, 80x25 characters 8x8 dot matrix, 6x7 resolution.

PRINTER INTERFACE SUPPORT

Centronics preferred, RS232 is also supplied standard.

OTHER I/O SUPPORT

Additional optional output ports include RS232, TSS buffered RS232, Centronics wirewrap development boards.

PACKAGING

4 slots are provided. Detachable keyboard, ASCII type with 5 programmable function keys.

SALES AND SERVICE

Nearest dealer information:

201 440-9200

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$1,995.

Guarantee:

1 year.

System serviced by:

Dealer, factory and regional.

VENDOR STATEMENT

The Sanyo MBC-1000 is a full sized, full power computer that comes standard with CP/M, Sanyo Basic, Diagnostics, and Utilities.

The MBC-2000 and 3000, our larger "growth oriented" machines, offer increased initial disc and graphics capacity and expandability through multibus slots.

Sundance 1

The Sundance comes standard with a built-in Winchester and tape backup.

ORIENTATION

The integrated Sundance computer system is an easy to use, low cost single user system with hardware and software capabilities normally found only in much larger systems. The entire system is contained in a single compact and attractive office environment desktop unit. Since it is a complete system, it offers the user comprehensive application support for every business need. It allows the user to migrate to a multi-user system as the computing requirements grow.

MANUFACTURER

Onyx Systems, Inc.
25 E. Trimble Road
San Jose, CA 95131
408 946-6330

Onyx Systems was founded in 1978 to design and manufacture state of the art microcomputer systems. In October 1980, Onyx was acquired by ONYX/IMI, Inc., and along with IMI, a manufacturer of Winchester disk drives, now forms the nucleus of this vertically integrated systems company. The growth path at Onyx has been rapid. Onyx sales grew from $3.6 million in 1980 to $16.9 million in 1981, and 1982 is expected to increase to over $30 million.

FIRST DELIVERED

October 1981.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

1 5¼" Winchester with 6.7MB (unformatted).

DISPLAY CONSOLE

12" non-glare green phosphor, 24x80, or 24x132 characters, 7x9 dot matrix with descenders; double height and/or double width characters; 96-character displayable ASCII subset (upper and lower case numeric, line drawing, punctuation) normal, reverse video, blinking, underline, half intensity.

PRINTER INTERFACE SUPPORT

Will support a choice of printers to meet every business requirement; a letter quality unit, a low cost dot matrix, and a high speed (200 lines per minute). The system will support 2 printers — a serial and a parallel — simultaneously.

OTHER I/O SUPPORT

3 ports are standard: 1 RS232 for serial printer, 1 for a parallel and 1 RS232 port with modem support for communication with another computer system. The parallel port can also be used to interface to an 8" floppy for loading program and data files.

PACKAGING

Built-in magnetic tape cartridge for fast easy backup for the Winchester. Since the tape is completely enclosed in a rugged dustproof case, it is a highly reliable means of backing up critical data. The tape is single ¼" drive, 6250 bpi, 90ips and 10MB (300' tape). Detachable keyboard with 67 sculptured keys in standard typewriter format.

SALES AND SERVICE

Nearest dealer information:
408 946-6330

Standard system for price comparison:
CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:
$7395.

Guarantee:
3 months.

System serviced by:
Service contracts can be purchased through Onyx Systems and on-site service performed by RCA Data Services.

VENDOR STATEMENT

All Onyx products feature:
Switching power supplies that offer cooler operation and greater reliability than non-switching types; Line voltage sensing circuits that eliminate power failure induced disk write errors; Large format logic cards that use a minimum of connections; 4-layer circuit boards; Automatic semi-conductor memory check (parity check); Over 2 years of cartridge tape backup use on in-field products.

Supermicro 8

With a built-in Winchester, this system can expand up to 8 users, each with his own Z80.

ORIENTATION

General purpose multi-user microcomputer system supports CP/M applications. Each user has his own CPU and 64KB. All users share a common Winchester disk drive via a high speed interprocessor bus. Supports a maximum of 8 users.

MANUFACTURER

Molecular Computer
1841 Zanker Road
San Jose, CA 95112
408 995-5440

Founded in January 1981, by Rockland K. Awalt. Today there are more than 150 installations, valued in excess of $3 million.

FIRST DELIVERED

February 1982.

PROCESSOR

Z80A CPU.
64KB standard main memory.
64KB per user maximum memory.

MASS STORAGE OPTIONS

1 5¼" Winchester with 10MB.
8" floppy with 500KB.
Expandable to 30MB Winchester disks.
20MB streamer tape.

DISPLAY CONSOLE

Any "dumb" terminal.

PRINTER INTERFACE SUPPORT

Any serial printer.

OTHER I/O SUPPORT

Standard RS232 modem.

PACKAGING

Free standing cabinet with internal mounting brackets for expansion capabilities.

SALES AND SERVICE

Nearest dealer information:
408 995-5440.

Standard system for price comparison:
CPU with 64KB memory.
2 floppies (or equivalent).
CP/M compatible (n/STAR).

Price for the above:
$7,995 + keyboard and display.

Guarantee:
3 months.

System serviced by:
Dealer, regional or local third party service.

VENDOR STATEMENT

The Supermicro 8 system offers a high performance, low cost entry into the multiple user local network market. The Supermicro 8 is designed to optimize price/performance while supporting either 1 user operating standalone, or up to 8 users performing a variety of simultaneous tasks.

Zendex Model 935

Based on the multibus, an industrial computer with considerable expansion capability.

ORIENTATION

Industrial quality, multibus based general purpose computer.

MANUFACTURER

Zendex Corporation
6644 Sierra Lane
Dublin, CA 94568
415 828-3000

Zendex is a 3 year old company, established in July of 1979. Annual sales of $4 to $6 million. Systems are sold through a national and international rep network.

PROCESSOR

8085 CPU.
64KB standard main memory.
64KB maximum main memory.

MASS STORAGE OPTIONS

2 8" floppies, single-sided, single or double-density, 500KB each.
10MB fixed Winchester hard disk.

DISPLAY CONSOLE

2 RS232 ports are provided for console interface. The system does not come with a console, though an ADDS Viewpoint is available from Zendex.

PRINTER INTERFACE SUPPORT

2 RS232 ports, 1 Centronics printer port, and 1 universal PROM programmer port.

PACKAGING

A steel cabinet that is tabletop or pedestal mounted. The terminal is not included. There are 7 open multibus slots for expansion.

SALES AND SERVICE

Nearest dealer information:

415 828-3000

Standard system for price comparison:

CPU with 64KB memory.
2 floppies (or equivalent).
Keyboard and display.
CP/M.

Price for the above:

$7,690.

Guarantee:

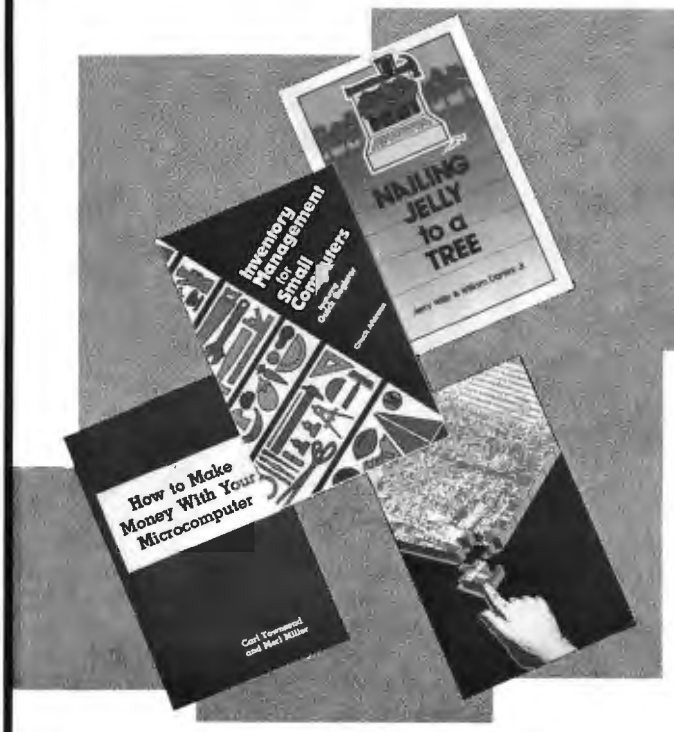
1 year.

System serviced by:

Factory.

VENDOR STATEMENT

The 935 represents a major advancement in business computer systems. By using state of the art components and design techniques, it has reduced the overall physical size of the computer without sacrificing performance or flexibility. The result is a computer system with the functionality of a large computer, packaged in a compact, attractive chassis suitable for use in a medium-sized business.



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PUBLIC BULLETIN BOARDS

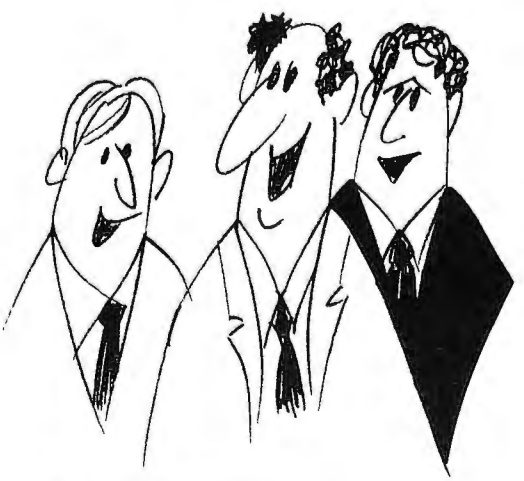
Electronic message systems (pictorially described as computerized bulletin boards — an updated version of the original cork board) exist in the hundreds and can be found throughout this country, Canada and abroad. Since these systems cover a broad spectrum of interests, this column will be oriented to general "points of interest" and CP/M related activities.

Bulletin boards can be an informative and enjoyable extension to your home and office computing activities. Specifically, they provide a means of communication between computer users of similar interests. Most support the ability to leave/receive messages to/from individuals, groups or the general public. Messages range from chit-chat, items for sale and philosophical discussions to specific user problems and group participation of concerns and interests.

Bulletin boards also act as repositories for computer programs, documentation and other data to be exchanged. In this respect, some have special interest orientation including: games, specific computers, amateur radio, public domain software, languages, databases and medical.

Numerous bulletin boards are devoted to CP/M. To utilize these systems, some knowledge of CP/M is helpful; however, they generally have HELP instructions and handholding prompts to aid the inexperienced user.

The following dialogue, courtesy of the Yelm, Washington, Computerized Bulletin Board operated by Dave Stanhope, should introduce you to the system's operating procedures and familiarize you with some of its capabilities. As you will note in the dialogue, the immediate logging onto Dave's system places you under control of the RIBBS system. From this vantage point, you may utilize the system's message services or exit to CP/M.



"A.M. to P.M. it's CP/M."

INSTRUCTIONS

```
HOW MANY NULLS (0-9) DO YOU NEED? 3
CAN YOUR TERMINAL DISPLAY LOWER CASE? Y

<<== Connected to the Yelm Computerized Bulletin Board ==>>
            <<== and CP/M software exchange ==>>
                 (110-300-450-600-710 BAUD)
                  Voice Tel. (206-458-5905)
                    Sysop: David Stanhope

On at 12:13:32 August 33, 1982

Please Wait...
Yelm, Washington RIBBS...vers 2.2

     CP/M is entered with the 'C' function of RIBBS.

     System should be up 24-hours a day except when
     I am using it, in which case it won't answer!!!
```

Bulletins

```
1> (8-22-82) Now supporting three disks: A:, B:, and C:.
2> (7-30-82) System no-longer requires <<== CALL-BACK ==>>.

(Prompting bell means system is ready for input).

What is your FIRST name ?cp/m
What is your LAST name ?review
Checking user file...
Where (City,State) are you calling from ?mercer isl, wa
Hello CP/M REVIEW from MERCER ISL, WA
Did I misspell anything ?n
This checking is only done the first time you call.
```

Bulletins for First-Time Users:

```
(1) Lists of other systems available in CP/M on drive
    B:. (SYSTEMS and  RCPMLST?)
(2) If want to implement file transfers on your machine,
    start by getting MBOOT3.ASM, it's by far the shortest.
    Get it as an ASCII file by using the "TYPE" command on
    this system. Assemble it with the appropiate equates,
    then use it to get one of the more versatile programs
    such as "MODEM7x". "TYPE DOWNLOAD.DOC" under CP/M for
    more info.
(3) If you need any help, or are looking for a specific
    program, please feel free to ask.

Logging CP/M REVIEW to disk...
Active # of msg's  26.
You are caller #  394
Next msg # will be  91
```

continued on page 64

```
Function (B,E,R,S,K,G,W,C,U,P,X,Q,Z (or '?' if not known)??

Functions supported:
S--> Scan messages      R--> Retrieve message
E--> Enter message      K--> Kill message
B--> retype Bulletins   W--> retype welcome
C--> exit to CP/M       U--> list User file
P--> Prompt (bel) tosl  X--> eXpert user mode
Q--> Quick summary      G--> Goodbye (sisnoff)
Z--> Descibe Hardware

Commands may be strung together, separated by semicolons.
For example, 'R;123' retrieves message # 123.

Software exchange is done under CP/M using
the XMODEM program (for intelligent transfer)
or the TYPE command (simple ASCII listing).

Function (B,E,R,S,K,G,W,C,U,P,X,Q,Z (or '?' if not known)?c
Please remember to type BYE before hanging up the phone.

To re-enter RIBBS, type:
A>RIBBS P

For info on software exchange, type:
A>TYPE DOWNLOAD.DOC

For general info, type:
A>HELP

Entering CP/M...

 * END *

A0>help
```

"HELP!"

```
     ***   Ctrl-S  to Pause, Ctrl-C to Quit.  ***
```

HELP File for the Yelm Software Exchange (07/30/82)

```
On RIBBS exit you saw the CP/M system prompt, either:
    A>  or  B> .

The letter indicates which drive (A: or B: , the system
has only 2) is the currently logged onto drive. The system
will look on the current (logged) drive for commands or
filenames. This system will always look for commands on
drive A: if can't find on current drive.

To change from one disk to the other, type the letter
of the disk followed by a colon; i.e... B:   or  A:
then hit return. This will cause that disk to become the
logged onto disk.
```

At CP/M System Level You Have the Following Commands Available:

```
BYE      : Terminate session and hanup phone.
RIBBS    : Access the Bulletin Board System
CHAT     : Allows terminal-terminal talk with sysop (if in).
DIR      : Directory display for disk. Usage is DIR or DIR B:
         : Ambiguous filenames may be used; DIR *.ASM or
         : DIR BIO*.* or DIR *.DOC or DIR ???TIME.* , etc..
HELP     : This is what you are looking at.
TYPE     : For listing files. Usage is; TYPE filename.typ
XMODEM   : File transfer for CP/M users (see THIS-SYS.DOC).
         : This program only works for CP/M users with the
         : compatible MODEM2 or MODEM7 or similar program.
WHATSNEW: Shows which files recently added/deleted.
         : Log onto the disk you want to check and enter
         : WHATSNEW
```

At CP/M system level you may display the Directory of the current drive (A or B) by typing 'DIR' . All files available to you are shown in alphabetical order, showing their filename (1 to 8 characters).filetype(1 to 3 characters). To see the Directory of the other (not logged onto) disk, type 'DIR B:' (for drive B:) the directory for the drive will be printed. Files that have an extension of .COM are command files, these files are not TYPE-able , they are files that execute a function when the name is typed, sometimes it requires additional information, such as a filename, as 'TYPE filename.typ' ; if the function does need such an argument, the filename specified would have to be on the current (logged) disk, or a 'NOT FOUND' or 'OPEN FAILED' or some similar negative message might appear. To display the contents of a 'TYPE'-able file, use 'TYPE' . If the file is on the other drive, just type in the letter of the drive before the name of the file. Example:

```
TYPE A:filename.typ  (i.e... TYPE A:MODEM7.DOC)
TYPE B:filename.typ   (i.e... TYPE B:RCPMLST9.NEW)
TYPE filename.typ    (i.e... TYPE XMODEM39.ASM)
```

or just switch to the disk as described before.

Other ASCII (TYPE-able) Files Are:

```
Filename.ASM  ;CP/M assembly language source file
Filename.MAC  ;CP/M assembly language macro file(needs MAC)
Filename.BAS  ;usually Microsoft BASIC source file
Filename.ASC  ;senerally BASIC source file(ASC means ASCII)
Filename.DOC  ;documentation file for program 'filename'
Filename.TXT  ;ASCII text file(could be DOC or BASIC or ? )
```

An exception to the above is the file with a filetype of .OBJ - This is a command file (.COM) that is renamed to allow download via XMODEM. Like any .COM file, it is not TYPE-able.

continued on page 66

Certain files on this system are stored on the disk in a squeezed format to save space. These files are identified by the fact that there file time will have a 'Q' in as the second character. These may be typed using the 'typeSQ' command. Use the commands "SQ" and "USQ" on your system to squeeze and un-squeeze files. The can be "xmodemed" in the squeezed format.

A file of phone numbers for other public access computer systems exists on B:. It is 'SYSTEMS' . To get the entire list (approx 160 entries), enter 'TYPE B:SYSTEMS' from prompt A>, and it will be printed.

System Error Handling

If a system error should occur during your operation of it (example: BDOS ERROR ON B: BAD SECTOR), you may be able to recover by "re-booting" the system. Enter Control-C, please notify me of any system crash on RIBBS.COM, if you can recover control of the system, if not hangup.

"Chatting" with the System Operator

If you need the assistance of the System Operator, or Just want to "chat", enter as folllows:

CHAT<cr>

The system will return to normal, in 30 seconds if the system operator is not available...

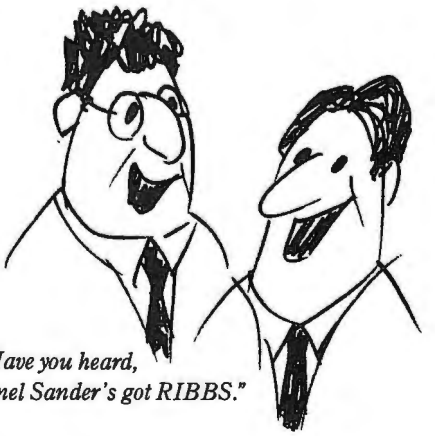
If you have any suggestions, questions, complaints, etc., feel free to call: David Stanhope, phone 206-458-5905.

*** ENJOY ***

```
A0>dir b:

DELETE  AQM    8k | MODEM7  LIB   14k
DU-V75  AQM   28k | MODEM76 AQM   47k
DU-V75  DOC    6k | RCPMLIST2Q6   14k
ELIZA   BAS    8k | RESOURCEDQC   17k
FIGFORTHDOC    8k | RESOURCEOBJ    6k
FIGFORTHOBJ    7k | SNOOPY  PIC    3k
GAMMON  BAS   18k | SYSTEMS        11k
MBOOT3  ASM    8k | USQ-14  OBJ   10k
MEM-MAP ASM    4k | ZILCH   BAS    8k
MODEM7  DOC   16k
Drive B: - 19 Files (24 entries) 0k bytes remaining
A0>type download.doc
Ctrl-S pauses, Ctrl-C Aborts, Ctrl-X skips to next file

Listing file DOWNLOAD.DOC
```



"Have you heard, Colonel Sander's got RIBBS."

File Transfer Procedures

If you want to take full advantage of the file transfer capabilities of this system, it is recommended that you utilize the MODEM.ASM program (from the CP/M User's Group, Volume 25.11) to reliably receive (or transmit) files from (or to) this system. MODEM7 is a later offspring of this program.

Those not having CP/M and/or a MODEM programs can TYPE the file and either print the listing on their printer or use a DATA CAPTURE program to save it in memory and then to disk. If you are running CP/M, but don't yet have the MODEM(MODEM7) program, get a copy of MBOOT3(MBOOT).ASM first. It is much shorter and once you have it, you can use it to get the MODEM(MODEM7).ASM file. MBOOT3 is about 8k bytes where MODEM7 over 40K, not counting the libary file and other files requited to use it.

Receiving Files

Determine first, that you have enough storage on your disk system to receive a file (use STAT<cr> on your system to find out). The directory "DIR" command on this system will tell you how long the file is. Now return to the Remote System, determine which file that you want, and then use XMODEM.COM to command the system to send the file to your system, as shown in the following example:

XMODEM S FILENAME.EXT<cr>

The "S" option causes XMODEM.COM to S(end) the file that you want to receive, "FILENAME" is the file you want, ".EXT" is the file type. Now use Control-E to exit from your MODEM.COM program (was terminal mode) and then enter as follows to command your system to receive the file:

MODEM R FILENAME.EXT<CR>

The "R" option commands your MODEM.COM program to R(eceive) the file that the Remote is waiting to send...allow about 15 seconds to get "hooked-up", and you are on your way! When you get a "TRANSFER COMPLETE" message on your console screen, return to the T(erminal) option with the MODEM.COM program, press carriage return, and you will again display the CP/M Remote system prompt.

This system will now allow you to send ".COM" files from it, such files that are available are locally renamed to ".OBJ".

continued on page 69

DYNACOMP

Quality CP/M Software
MBASIC and CBASIC

GAMES

BRIDGE MASTER — **Price: $21.95 Diskette**

If you liked DYNACOMP'S BRIDGE 2.0, you will absolutely love BRIDGE MASTER. BRIDGE MASTER is a comprehensive bridge program designed to provide hours of challenging competition. Bidding features include the Blackwood convention, Stayman convention, pre-emptive openings, and recognition of demand bids and jump-shift responses. After playing a specific hand, you may replay the same hand, with the option of switching cards with your computer opponents. This feature allows you to compare your bidding and playing skills to BRIDGE MASTER. Bonuses for game contracts and slams are awarded as in duplicate bridge. Doubled contracts are scored based upon a computer assigned vulnerability. A score card is displayed at the conclusion of each hand. The score card displays a summary of total hands played, total points scored, number of contracts made and set, and % bids made. BRIDGE MASTER is clearly the best computer bridge program available.

DYNACOMP'S previous BRIDGE 2.0 customers may upgrade to BRIDGE MASTER for a nominal charge of $5.00 plus postage and handling (see ordering information box).

POKER PARTY — **$23.95 Diskette**

POKER PARTY is a draw poker simulation based on the book, POKER, by Oswald Jacoby. This is the most comprehensive version available for microcomputers. The party consists of yourself and six other (computer) players. Each of these players (you will get to know them) has a different personality in the form of a varying propensity to bluff or fold under pressure. Practice with POKER PARTY before going to that expensive game tonight! Apple cassette and diskette versions require a 32K (or larger) Apple II.

MANAGEMENT SIMULATOR — **$29.95 Diskette**

This program is both an excellent teaching tool as well as a stimulating intellectual game. Based upon similar games played at graduate business schools, each player or team controls a company which manufactures three products. Each player attempts to outperform his competitors by setting selling prices, production volumes, marketing and design expenditures, etc. The most successful firm is the one with the highest stock price when the simulation ends.

FLIGHT SIMULATOR — **$23.95 Diskette**

A realistic and extensive mathematical simulation of take-off, flight and landing. The program utilizes aerodynamic equations and the characteristics of a real airfoil. You can practice instrument approaches and navigation using radials and compass headings. The more advanced flyer can also perform loops, half-rolls and similar aerobatic maneuvers. Although this program does not employ graphics, it is exciting and very addictive. See the software review in COMPUTRONICS. Runs in 16K Atari.

VALDEZ — **$21.95 Diskette**

VALDEZ is a computer simulation of supertanker navigation in the Prince William Sound/Valdez Narrows region of Alaska. Included in this simulation is a realistic and extensive 256 x 256 element map, portions of which may be viewed using the ship's alphanumeric radar display. The motion of the ship itself is accurately modelled mathematically. The simulation also contains a model for the tidal patterns in the region, as well as other traffic (outgoing tankers and drifting icebergs). Chart your course from the Gulf of Alaska to Valdez Harbor! See the software reviews in 80 Software Critique and Personal Computing.

BACKGAMMON 2.0 — **$23.95 Diskette**

This program tests your backgammon skills and will also improve your game. A human can compete against a computer or against another human. The computer can even play against itself. Either the human or the computer can double or generate dice rolls. Board positions can be created or saved for replay. BACKGAMMON 2.0 plays in accordance with the official rules of backgammon and is sure to provide many fascinating sessions of backgammon play.

SPACE EVACUATION! — **$19.95 Diskette**

Can you colonize the galaxy and evacuate the Earth before the sun explodes? Your computer becomes the ship's computer as you explore the universe to relocate millions of people. This simulation is particularly interesting as it combines many of the exciting elements of classic space games with the mystery challenge of ADVENTURE.

MONARCH — **$18.95 Diskette**

MONARCH is a fascinating economic simulation requiring you to survive an 8-year term as your nation's leader. You determine the amount of acreage devoted to industrial and agricultural use, how much food to distribute to the populace and how much should be spent on pollution control. You will find that all decisions involve a compromise and that it is not easy to make everyone happy. Runs in 16K Atari.

GO FISH — **$18.95 Diskette**

GO FISH is a classic children's card game. The opponent is a friendly computer with user inputs that are simple enough for small children to easily master. A must for children!

STARBASE 3.2 — **$17.95 Diskette**

This is the classic space simulation, but with several new features. For example, the Croylins now shoot at the Invincible without warning while also attacking starbases in other quadrants. The Croylins also attack with both light and heavy cruisers and move when shot at! The situation is hectic when the Invincible is besieged by three heavy cruisers and a starbase S.O.S. is received! The Croylins get even! See the software reviews in A.N.A.L.O.G., 80 Software Critique and Game Merchandising.

GAMES PACK I — **$18.95 Diskette**

GAMES PACK 1 contains the classic computer games of BLACKJACK, LUNAR LANDER, CRAPS, HORSERACE, 8WITCH and more. These games have been combined into one large program for ease in loading. They are individually accessed by a convenient menu. This collection is worth the price just for the DYNACOMP version of BLACKJACK.

GAMES PACK II — **$18.95 Diskette**

GAMES PACK II includes the games CRAZY EIGHTS, JOTTO, ACEY-DUCEY, LIFE, WUMPUS and others. As with GAMES PACK I, all the games are loaded as one program and are called from a menu. You will particularly enjoy DYNACOMP's version of CRAZY EIGHTS.

Why pay $7.95 or more per program when you can buy a DYNACOMP collection for just $10.95?

MOON PROBE — **$16.95 Diskette**

This is an extremely challenging "lunar lander" program. The user must drop from orbit to land at a predetermined target on the moon's surface. You control the thrust and orientation of your craft plus direct the rate of descent and approach angle. Runs in 16K Atari.

CRANSTON MANOR ADVENTURE — **$19.95 Diskette**

CRANSTON MANOR ADVENTURE takes you into mysterious CRANSTON MANOR where you attempt to gather fabulous treasures. Lurking in the manor are wild animals and robots who will not give up the treasures without a fight. The number of rooms is greater and the associated descriptions are much more elaborate than the current popular series of Adventure programs, making this game the top in its class. Play can be stopped at any time and the status stored on diskette.

TYPE 'N' TALK

DYNACOMP is now distributing the new and revolutionary TYPE-'N-TALK™ (TNT) speech synthesizer from Votrax. Simply connect TNT to your computer's serial interface, enter text from the keyboard and hear the words spoken. TNT is the easiest-to-program speech synthesizer on the market. It uses the least amount of memory and provides the most flexible vocabulary available anywhere!

TYPE-'N'-TALK List price $375. DYNACOMP'S price $319.95 plus $5.00 for shipping and handling.

MISCELLANEOUS

5¼" DISKETTES (soft sectored/ten sectored) — **$39.95/20 Diskettes**

As you might imagine, DYNACOMP purchases diskettes in large quantities and at wholesale prices. We want to pass the savings along to you!

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PFS is a single diskette, menu-oriented system composed of ten different programs. Besides recording your expenses and tax deductible items, PFS will sort and summarize expenses by payee, and display information on expenditures by any of 26 user defined codes by month or by payee. PFS will even produce monthly bar graphs of your expenses by category! This powerful package requires only one disk drive, minimal memory. You can record checks plus cash expenses so that you can finally see where your money goes and eliminate guesswork and tedious hand calculation. PFS has been demonstrated on network (CBS) TV!

TAX OPTIMIZER — **$59.95 Diskette**

The TAX OPTIMIZER is an easy-to-use, menu oriented software package which provides a convenient means for analyzing various income tax strategies. The program is designed to provide a quick and easy data entry. Income tax is computed by all tax methods (regular, income averaging, maximum and alternate minimum tax). The user may immediately observe the tax effect of critical financial decisions. TAX OPTIMIZER has been thoroughly field tested in CPA offices and comes complete with the current tax tables in its data files. TAX OPTIMIZER is tax deductible!

ABOUT DYNACOMP

DYNACOMP is a leading distributor of small system software with sales spanning the world (currently in excess of 50 countries). During the past three years we have greatly enlarged the DYNACOMP product line, but have maintained and improved our high level of quality and customer support. The achievement in quality is apparent from our many repeat customers and the software reviews in such publications as COMPUTRONICS, 80 Software critique, A.N.A.L.O.G., Softalk, Creative Computing and Kilobaud. DYNACOMP software has also been chosen for demonstration on network television. Our customer support is as close as your phone. It is always friendly. The staff is highly trained and always willing to discuss products or give advice.

EDUCATION

TEACHERS' AIDE — **$17.95 Diskette**

TEACHERS' AIDE consists of three basic modules contained in one program. The first module provides addition and subtraction exercises of varying levels of difficulty. The second module consists of multiplication problems in which the student may be tested both on the final answer and/or on the subtotal answers in the long hand procedure. Several levels of complexity are provided here as well. The third module consists of division problems; one particularly nice feature of the division modules is that the long hand division steps can be displayed along with the remainder in order to clearly demonstrate the procedure by which the remainder is derived. Using TEACHER'S AIDE is not merely a drill, but rather a learning experience.

STATISTICS and ENGINEERING

DIGITAL FILTER — **$43.95 Diskette**

DIGITAL FILTER is a comprehensive data processing program which permits the user to design his own filter function or choose from a menu of filter forms. In the explicit design mode the shape of the frequency transfer function is specified by directly entering points along the desired filter curve. In the menu mode, ideal low pass, high pass and bandpass filters may be approximated to varying degrees according to the number of points used in the calculation. These filters may optionally also be smoothed with a Hanning function. In addition, multi-stage Butterworth filters may be selected. Features of DIGITAL FILTER include plotting of the data before and after filtering, as well as display of the chosen filter functions. Also included are convenient data storage, retrieval and editing procedures.

DATA SMOOTHER — **$23.95 Diskette**

This special data smoothing program may be used to rapidly derive useful information from noisy business and engineering data which are equally spaced. The software features choice in degree and range of fit, as well as smoothed first and second derivative calculation. Also included is automatic plotting of the input data and smoothed results.

FOURIER ANALYZER — **$23.95 Diskette**

Use this program to examine the frequency spectra of limited duration signals. The program features automatic scaling and plotting of the input data and results. Practical applications include the analysis of complicated patterns in such fields as electronics, communications and business.

TFA (Transfer Function Analyzer) — **$23.95 Diskette**

This is a special software package which may be used to evaluate the transfer functions of systems such as hi-fi amplifiers and filters by examining their response to pulsed inputs. TFA is a major modification of FOURIER ANALYZER and contains an engineering-oriented decibel versus log-frequency plot as well as data editing features. Whereas FOURIER ANALYZER is designed for educational and scientific use, TFA is a engineering tool. Available for all computers.

HARMONIC ANALYZER — **$28.95 Diskette**

HARMONIC ANALYZER was designed for the spectrum analysis of repetitive waveforms. Features include data file generation, editing and storage/retrieval as well as data and spectrum plotting. One particularly unique facility is that the input data need not be equally spaced or in order. The original data is sorted and a cubic spline interpolation is used to create the data file required by the FFT algorithm.

FOURIER ANALYZER, TFA and HARMONIC ANALYZER may be purchased together for a combined price of $51.95 (three cassettes) and $63.95 (three diskettes).

REGRESSION I — **$23.95 Diskette**

REGRESSION 1 is a unique and exceptionally versatile one-dimensional least squares "polynomial" curve fitting program. Features include very high accuracy; an automatic degree determination option; an extensive internal library of fitting functions; data editing; automatic data, curve and residual plotting; a statistical analysis (eg: standard deviation, correlation coefficient, etc.) and much more. In addition, new fits may be tried without reentering the data. REGRESSION I is certainly the cornerstone program in any data analysis software library.

REGRESSION II — **$23.95 Diskette**

PARAFIT is designed to handle those cases in which the parameters are imbedded (possibly nonlinearly) in the fitting function. The user simply inserts the functional form, including the parameters (A(1), A(2), etc.) as one or more BASIC statement lines. Data, results and residuals may be manipulated and plotted as with REGRESSION 1. Use REGRESSION I for polynomial fitting, and PARAFIT for those complicated functions.

MULTILINEAR REGRESSION (MLR) — **$28.95 Diskette**

MLR is a professional software package for analyzing data sets containing two or more linearly independent variables. Besides performing the basic regression calculation, this program also provides easy to use data entry, storage, retrieval and editing functions. In addition, the user may interrogate the solution by supplying values for the independent variables. The number of variables and data size is limited only by the available memory.

REGRESSION 1, II and MULTILINEAR REGRESSION may be purchased together for $51.95 (three cassettes) or $63.95 (three diskettes).

ANOVA — **$43.95 Diskette**

In the past the ANOVA (analysis of variance) procedure has been limited to the large mainframe computers. Now DYNACOMP has brought the power of this method to small systems. For those conversant with ANOVA, the DYNACOMP software package includes the 1-way, 2-way and N-way procedures. Also provided are the Yates 2^{K-P} factorial designs. For those unfamiliar with ANOVA, do not worry. The accompanying documentation was written in a tutorial fashion (by a professor in the subject) and serves as an excellent introduction to the subject. Accompanying ANOVA is a support program for building the data base. Included are several convenient features including data editing, deleting and appending.

BASIC SCIENTIFIC SUBROUTINES, Volumes 1 and 2

DYNACOMP is the exclusive distributor for the software keyed to the popular texts ***BASIC SCIENTIFIC SUBROUTINES, Volumes 1 and 2*** by F. Ruckdeschel (see advertisements in BYTE magazine). These subroutines have been assembled according to chapter. Included with each collection is a menu program which selects and demonstrates each subroutine.

Volume 1
- Collection #1: Chapters 2 and 3—Data and function plotting; complex variables and functions.
- Collection #2: Chapter 4—Extended matrix and vector operations.
- Collection #3: Chapters 5 and 6—Random number generators (Poisson, Gaussian, etc.); series approximations.

Price per collection: $20.95 Diskette

All three collections are available for $53.95 (three diskettes).

Volume 2
- Collection #1: Chapter 1—Linear, polynomial, multidimensional, parametric least squares.
- Collection #2: Chapter 2—Series approximation techniques (economization, inversion, reversion, shifting, etc.).
- Collection #3: Chapter 3—Functional approximations by iteration and recursion.
- Collection #4: Chapter 4—CORDIC approximations to trigonometric, hyperbolic, exponential and logarithmic functions.
- Collection #5: Chapter 5—Table interpolation, differentiation and integration (Newton, LaGrange, splines).
- Collection #6: Chapter 6—Methods for finding the real roots of functions.
- Collection #7: Chapter 7—Methods for finding the complex roots of functions.
- Collection #8: Chapter 8—Optimization by steepest descent.

Price per collection: $18.95 Diskette

All eight collections are available for $129.95 (eight diskettes).

Because the texts are a vital part of the documentation, ***BASIC SCIENTIFIC SUBROUTINES, Volumes 1 and 2*** are available from DYNACOMP.

BASIC SCIENTIFIC SUBROUTINES, Vol. 1 (319 pages): $19.95 + 75¢ postage
BASIC SCIENTIFIC SUBROUTINES, Vol. 2 (790 pages): $23.95 + $1.50 postage

See reviews in KILOBAUD and Dr. Dobbs.

ORDERING INFORMATION

All orders are processed and shipped within 48 hours. Please enclose payment with order and include the appropriate computer information. If paying by VISA or Master Card, include all numbers on card. Purchase orders accepted.

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Sending Files

```
The Remote System can also receive files with XMODEM.COM,
as follows:

XMODEM R FILENAME.EXT<cr>

 This  commands  XMODEM.COM to wait to receive a  file  from
you, exit your MODEM.COM program (Control-E), then enter:

MODEM S FILENAME.EXT<cr>

Do  not attempt to send files of type ".COM",  as the Remote
System will abort receiving them...rename them to ".OBJ" and
then send...

A0>bye                                          "BYE."

From Dave: So-long, please call again...

Off at 12:40:35 August 33, 1982
```

RCPM LISTINGS

The following is a list (courtesy of Kelly Smith, operator of the CP/Net located in Simi Valley, California) of CP/M bulletin boards available around the country by region. It provides a description of each system including operating hours, storage capacity and any unique characteristics such as special interests.

Remote CP/M Software Exchange Systems, List No. 26
Last Revised June 20th, 1982

```
 A   summary of all known (and running) Remote CP/M  Software
Exchange Systems using XMODEM for program transfers.  It
would  be  appreciated if operators of new RCPM  systems  will
transmit  the  needed information about their systems  to  Ben
Bronson  [Hyde  Park  RCPM  (312) 955-4493],  to  Jud  Newell
[Mississauga RCPM (416) 826-5394], or to Kelly Smith [CP/M-NET
(805) 527-9321].

Ben, Jud, & Kelly will attempt to coordinate  updates  to  the
RCPMLIST as they occur...
```

List No. 26 Revised and Updated Courtesy of:
Mississauga RCPM and Hyde Park RCPM

==========

Revision Summary as of June 20, 1982:

```
Note: [& =  data changed since RCPMLIST.25a, 05/08/82]
      [> =  data changed since RCPMLIST.25,  05/07/82]
```

continued on page 71

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LICENSING: **E-LYNC** is licensed on a per user basis. If you intend to use **E-LYNC** to communicate with another person, they must also purchase **E-LYNC. E-LYNC** for the IMB PC is written in 8088 Assembly Language. If you intend to communicate with a CP/M system you will also need the CP/M version of **E-LYNC.** ISA has both versions of **E-LYNC** available. **E-LYNC** can be upgraded to **LYNC** for $95.

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Northeast

MISSISSAUGA ONTARIO RCP/M, (416) 826-5394, Jud Newell. 24 hrs.110,300,450,600,710, 1200 baud. No A.L.D.S. Up as of 06/20/82. 20Mb hard disc now on line 24 hrs/day. [Toronto] Special Interest in New and New Releases of Software. System supports extensive HELP files and Software DATABASE.

MISSISSAUGA ONTARIO HUG-RCP/M, (416) 273-3011, Toronto Heath Users Group. 1800-0600 wkdys, 24 hrs wkends. 110,300,450,600,710 baud. No A.L.D.S. Up as of 06/20/82. 2+ Mb of files on 5 drives. [Toronto]

Hamilton Area Packet Radio Network (HAPN), 416-335-6620, Stu Beal. 24 hours. 110,300,450,600,710 baud. No A.L.D.S. Up as of 06/20/82. @? K files on line [Hamilton, Ontario]
$ System now running as a CNODE in Eastern Canada.

Johnson City, NY SJBBS, 607-797-6416, Charles ---. No call back. Eves., etc. 300 baud. No alternative long-distance service. Up as of 05/07/82. @ 2 Mb of files on 2 drives.[Upstate New York]

SuperBrain RCPM, 617-862-0781, Paul Kelly. 1900-0700 wkdys, 24 hrs wkends. 110, 300, & 1200 baud. SPRINT, ITT, MCI. Up as of 03/20/82. @ 300 K files on-line. [Lexington, MA: Boston area]
(Special interest in Superbrain-adapted CP/M programs)

Rochester RBBS, 716-223-1100, Arnie McGall. No call back. 24 hrs. 110 & 300 baud. SPRINT, MCI, ITT. Up as of 05/31/82. @1.8 Mb of files on 3 drives. [Upstate New York]
(S-100 based. General CP/M software. The standard RBBS/ RCPM system coexists with a separate passworded message system called Datastar, which can be entered from CP/M but runs on a separate computer. 600 baud capability expected soon)

Bearsville Town SJBBS, 914-679-6559, Hank Szyszka. No call back. 110,300,450,600,710 baud. No a.l.d.s. Up as of 03/21/82. @ 2MB of files on 4 drives. [Upstate New York].
(Installing MP/M. All CPMUG programs available by request. General CP/M software)

East Central

Flanders, N.J. 201-584-9227, Ken Stritzel. No Call Back. 24 hours, 110,300,450,600,710 baud. SPRINT,MCI. Up as of 03/10/82. @ 500 k on 2 drives.[Northern New Jersey]

Paul Bogdanovich's RBBS, 201-747-7301. No call back. 1800-2300 wkdys & 0800-2300 wkends. 300 baud. a.l.d.s. accessibility & disk capacity not known. Up as of 05/03/82. [New Jersey]
> NEW SYSTEM. Further data needed.

continued on page 73

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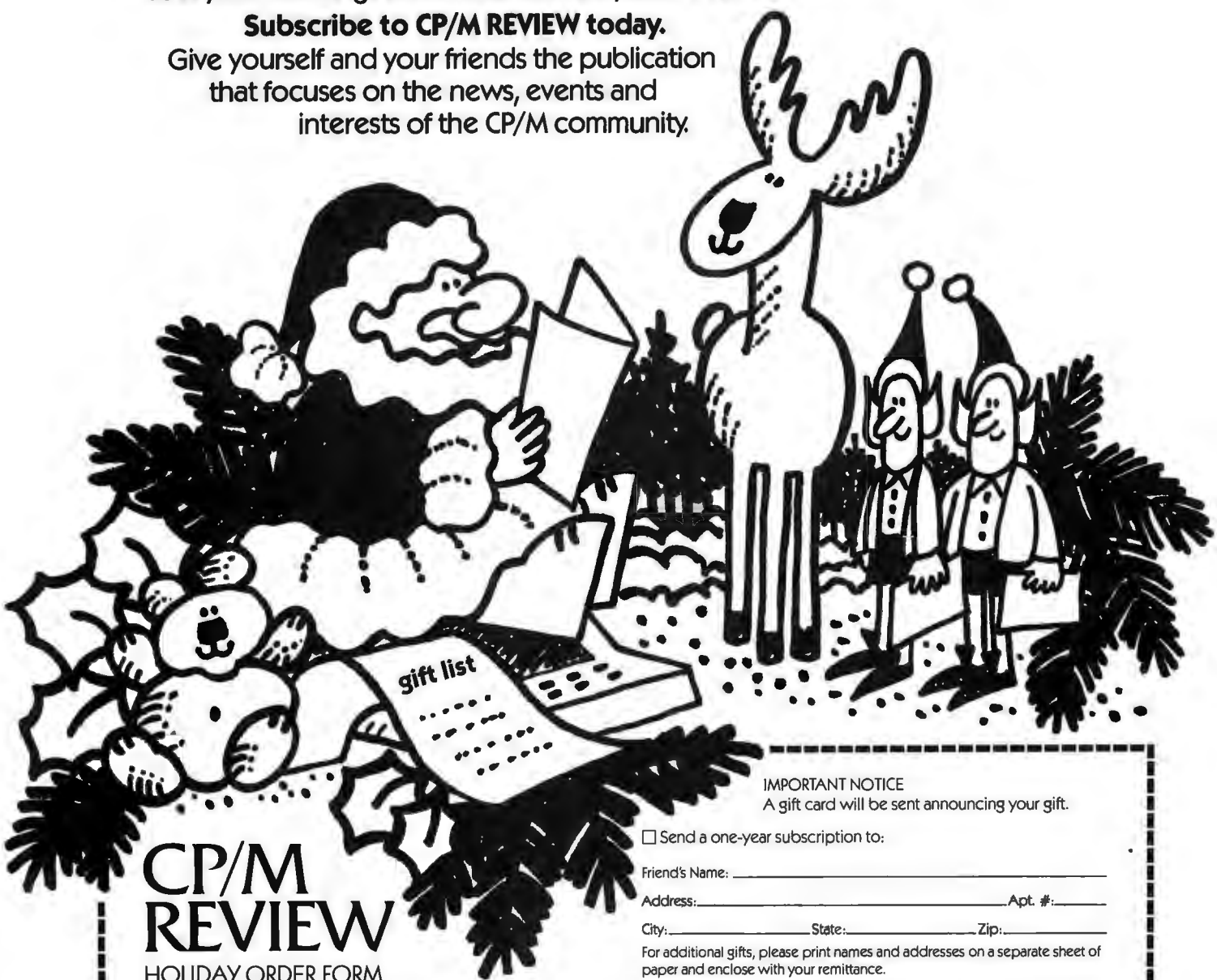

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Remote CP/M and Bulletin Board System of Cranford, New Jersey 201-272-1874, Bruce Ratoff. Eves., etc. No call back. 110,300, 450 & 600 baud. SPRINT, MCI. Up as of 06/20/82. 2-3 Mb of files on 3 drives. Bulletin Board of SIG/M Group [New Jersey]
(General CP/M software; active also as a bulletin board)

Allentown RBBS/RCPM System, 215-398-3937, Bill Earnest. 24 hrs. No call back. 110, 300, 450, 600, 710 baud. SPRINT & ITT. Up as of 06/20/82. @ 10. Mb. of files on hard disk (=4 logical disks). [E.Pennsylvania]
(General CP/M software. Bulletin board of the Lehigh Valley Computer Club and SIG/M Group)

Bethesda, Md. RCP/M, 301-229-3196, John Labovitz, no call back. 2300-1500 weekdays, 2300-900 weekends. SPRINT,MCI and ITT. 300,450 baud. @2.4mb on line including most of 'C' users group stuff. Up as of 06/20/82.
% NEW SYSTEM. Special Interest in 'C' programs. Most of 'C'
% users group programs are available.

Laurel, Md RCPM/RBBS, 301-953-3753, Wayne Hammerly. No call back. 24 hours. No A.L.D.S. 2 drives with 600k capacity now on line. PMMI on order, currently running at 300 baud only. Up as of 06/20/82

RLP RCP/M, McLean Va, 703-524-2549, Bob Plouffe. N Call back. 24 hours. SPRINT & MCI. 4 (N*) Drives with 640kb of files. Running CBBS for messages. Up as of 06/18/82
% Phone Number corrected. Note correct number is 703-524-2549

Arlington RCP/M, Va. 703-536-3769, Eliot Ramey. No call back. 2300-1500 weekdays, 2300-1000 weekends. SPRINT,MCI,ITT. 110-710 baud. @ 700 k files. Up as of 04/09/82. [D.C. area]
+ New System. Main interest in universally usable files and
+ Northstar. Sysop not interested in Osborn, Heath, Apple and
+ TRS files.
> Runs at PMMI baud rates.

Grafton, Va. RBBS, 804-898-7493, Dave Holmes. No call back. 24 hrs. 300 baud. No a.l.d.s.? @ 200 K of files on 2 drives. Up as of 06/20/82. (Tidewater Va.)
(Carries CP/M, TRS-80 & Apple software; plans for setting up a dual system (on one line) with an LNW-80 as well as the CP/M computer. Active as bulletin board)

State College, Pa. CUG-NODE, 814-238-4857, Joe Shannon. No call back. 24 hours. 300 baud on login, then PMMI baud rates. No a.l.d.s.? @ 3 mb of files on 3 drives. Up as of 05/08/82. [Pennsylvania]
+ New System . Runs C-NODE software, with UNIX-like commands
> (type 'cat commands' after reaching the '%' prompt) and file
> xfer programs called 'send' & 'rcv' which are MODEM/XMODEM
> compatible. Only BDS- and other C s'ware for downloading;
> no mss system.

continued on page 75

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Midwest

Geneseo, Ill, 309-944-5455, Richard Blessing, call back. 0700-1700. 110,300,450,600,710 baud, No ALDS. Up as of 04/22/82. @ 500 k on two drives.
$ Temporarily Down as SYSOP is moving. Will be back up with a
$ new phonenumber.

IBM-PC BBS, 312-647-7636, Gene Plantz. No call back. 1800-0700 wkdys & 24 hrs wkends. 300 & 1200 baud. SPRINT, MCI, ITT. Up as of 05/26/82. @ 200 K of files. [Niles: Chicago area]
> NEW SYSTEM. Run for members of ACPU. Access to operating
> system requires password -- contact sysop. Bell 212A freqs
> at 1200 baud.

AIMS, Hinsdale, Ill. 312-789-0499, Mark Pulver. No call back. Eves. & ? 300 baud. SPRINT, MCI, ITT. @ 10 mb of files on hard disk. Up as of 04/28/82. [Chicago area]

NEI RCPM System, 312-949-6189, Chuck Witbeck. No call back. 1800-0100 wkdys, 1200-0100 wkends. 300,450,600,710 baud. MCI, SPRINT, ITT. Up as of 05/04/82. @ 2 Mb of files on 2 drives. [Chicago area]
(Main emphasis is on communications programs, including versions adapted to non-standard CP/M systems)

Hyde Park RCPM/RBBS, 312-955-4493, Ben Bronson. No call back. 0100-1700 daily. 110, 300, 450, 600, 710 baud. SPRINT, ITT,MCI. Up as of 06/20/82. @ 2 Mb of files on 2 drives. [Chicago]
(Special interest in hard- & software reviews, C progs, and very recent releases of standard programs)

Logan Square RCPM, 312-252-2136, Earl Bockenfeld. No call back. 0100-1900 wkdys, irreg. on wkends. 110, 300, 450, 600,710 baud. SPRINT, ITT, MCI. Up as of 06/15/82. @ 1 Mb of files on 2 drives. [Chicago]
(Special interest in recent releases and developing on-line databases, with daily change of software on B drive)

HUG-CBBS, 312-671-4992, Paul Mayer & Dave Leonard. No call back. 2300-1900, 7 dys/wk. 300 baud. SPRINT, ITT, MCI. Up as of 04/03/82. @ 2 Mb of files on 2 drives. [Chicago]
(H-89 based, operated for the Heath-Zenith Users' Group and with a special interest in H19- & H89-adapted (as well as general CP/M) software)

Palatine RCPM, 312-359-8080, Tim Cannon. No call back. 1800-0600 wkdys, 24 hours weekends. 300 & 1200 baud. SPRINT, MCI,ITT. Up as of 05/31/82.@ 850 K of files on 4 drives. (With a Bell-mode 212A 1200 baud modem. [Chicago]

Westland, Michigan RBBS/RCPM, 313-729-1905, Ron Fowler. Call back. 24 hrs. 110, 300, 450 & 600 baud. SPRINT, MCI, ITT.

continued on page 76

Up as of 06/01/82. @ 1.4 Mb. of files on 2 drives. [Detroit]
(Emphasis on very recent releases)

Technical CBBS, 313-846-6127, Dave Hardy. No call back. 24 hrs. 110, 300, 450 & 600 baud. ITT, SPRINT, MCI. Up as of 06/20/82. @ 3 Mb of files on 3 drives. [Detroit area]
(Emphasis on very recent releases. RCPM sysops desiring access to the passworded RCPM Clearing House system should leave a mss on TCBBS. Active message system)

Royal Oak CP/M, 313-759-6569, Keith Petersen. Call back. 24 hrs. 110, 300, 450, 600, baud. 1200 baud modem now available on request. Use CHAT or leave a message if you want the 212A switched in. ITT, SPRINT, MCI. Up as of 06/20/82. @ 600 K on 2 floppy drives + 10 Mb on hard disk (=2 logical drives). [Detroit area]
(Emphasis on new programs & recent updates of standard progs.

Pontiac, Mi. RBBS/RCPM, 313-338-8505, Larry Breaux, 2pm-midnisht, ? Baud, ? ALDS, ? File Storage. Up as of 04/08/82.

Southfield, Mi, RBBS/RCPM, 313-559-5326, Howard Booker. No callback. 24 hrs. 300, 450 baud. ITT, SPRINT, MCI. Up as of 06/20/82. @ 1 Mb on 2 drives. [Michigan]
(Special interest in file directories & catalogs of other RCPM systems as well as general s'ware)

Fort Fone File Folder, 414-563-7442, Al Jewer, Shawn Everson. No Call Back. 24 hours. 110-710 baud. ALDS ?. Up as of 5/12/82. @1.1 mb on two drives.
$ NEW SYSTEM. Specializing in MP/M, CP/NET and BDSC programs.
$ 6mb Corvus Drive expected shortly.

Columbus CBBS, 614-272-2227 [268-CBBS], John Walpole. No call back. 24 hrs. 110-600 baud. SPRINT, ITT, (MCI?). Up as of 05/07/82. @ 300 K of files on 3 drives. [Ohio]
(Now running MP/M, on a Tarbell SD controller; occasional slow response means the sysop is also using the system; special interest in BDS-C programs. Also active as a bulletin board)

Mission, Ka, 913-362-9583, Dave Kobets. No Call Back. 24 Hours. 300,1200 Baud 212A Standard. ALDS?. Up as of 5/31/82. @ 2meg of files on 2 drives. [Kansas]
$ NEW SYSTEM. Running $eath H89, DD/DS drives, with high speed
$ access.

South

NACS/UAH RBBS/RCPM, 205-895-6749, Don Wilkes. Call back.24 hrs. 110, 300, 450, 600 baud. No a.l.d.s. Up as of 06/20/82. @ 700 K of files on 4 drives. [Huntsville, Alabama]
(Run for N. Ala. Computer Soc. at U. of Ala.; general CP/M software)

California

Pasadena CBBS, 213-799-1632, Dick Mead. No call back. 24hrs. 110-600+ baud. ITT, SPRINT, MCI. Up as of 06/20/82. @ 1.5 Mb of files on 2 floppies & 8.3 Mb on hard disk. All data now on hard disk.[Los Angeles area]
(Also active as bulletin board. General CP/M software)

G.F.R.N.Data Exchange [RBBS], 213-541-2503, Skip Hansen. 24 hrs. 300 & 1200 baud. SPRINT, MCI, ITT. Up as of 06/01/82. 2.4 Mb of files on 2 drives. [Palos Verdes, S. Cal.] (Standard CP/M s'ware with special interest in ham radio-related programs. Soon (with MP/M) will also be reachable thru 450 mhz radio. Note the 1200 baud capability)

Silicon Valley, Ca.RCP/M, 408-246-5014, Dave Carroll. No Call Back. 24 hours. 110,300,450,600,710 baud. No ALDS. Up as of 04/11/82. @1.2mb on 2 floppies. [Santa Clara, SF Bay Area]

San Jose Oxgate, 408-287-5901, Paul Traina. No call back. 1745 -0800 wkdys, 24 hrs wkends. 300 baud. SPRINT, MCI, ITT. Up as of 05/01/82. @ 2.4 mb of files on 3 drives. [SF Bay Area]
> Formerly Siliconia RCPM,inadvertently dropped from this list
> due to the name change. Networked with other systems using
> the Oxgate software.

Collossal Oxgate, 408-263-2588, Mel Kruts. Call back. Hours & other info not known. Up as of 05/01/82.
> NEW SYSTEM. Part of Oxgate network. This 'Collossal' has 2
> ells.

Piconet Oxgate, 415-965-4097, Byron McKay. No call back. 24 hrs. 110-710 baud. SPRINT, MCI, ITT. Up as of 05/07/82. @ 2 mb on 2 drives. [SF Bay Area]
> NEW SYSTEM. Part of Oxgate network. Sponsored by Piconet
> CPM Interest Group.

RBBS of Marin County, 415-383-0473, Jim Ayers. No call back.Eves & nites wkdys, 24 hrs wkends. 110, 300, 450, 600 baud. SPRINT, ITT, MCI. Up as of 03/10/82. @ 1000 K of files on 2 drives. [SF Bay Area]
(S-100 [IMSAI] based. 24-hour operation expected soon)

Larkspur RBBS/RCPM, 415-461-7726, Jim C. No call back. 24 hrs.110,300,450,600,710 baud. SPRINT, ITT, MCI. Up as of 06/10/82. 2+ Mb on 2 drives. [San Francisco area]
The system carries general & new CP/M software)

G.F.R.N Data Exchange [RBBS] Garden Grove, 714-534-1547, Doug Laing, 24 Hours, 300 and 1200 Baud, 5. mb of files on 6 drives, up as of 06/01/82. special interest in amateur radio and apple/cpm software, also general interest CP/M. This is the second G.F.R.N system. (Garden Grove, California]

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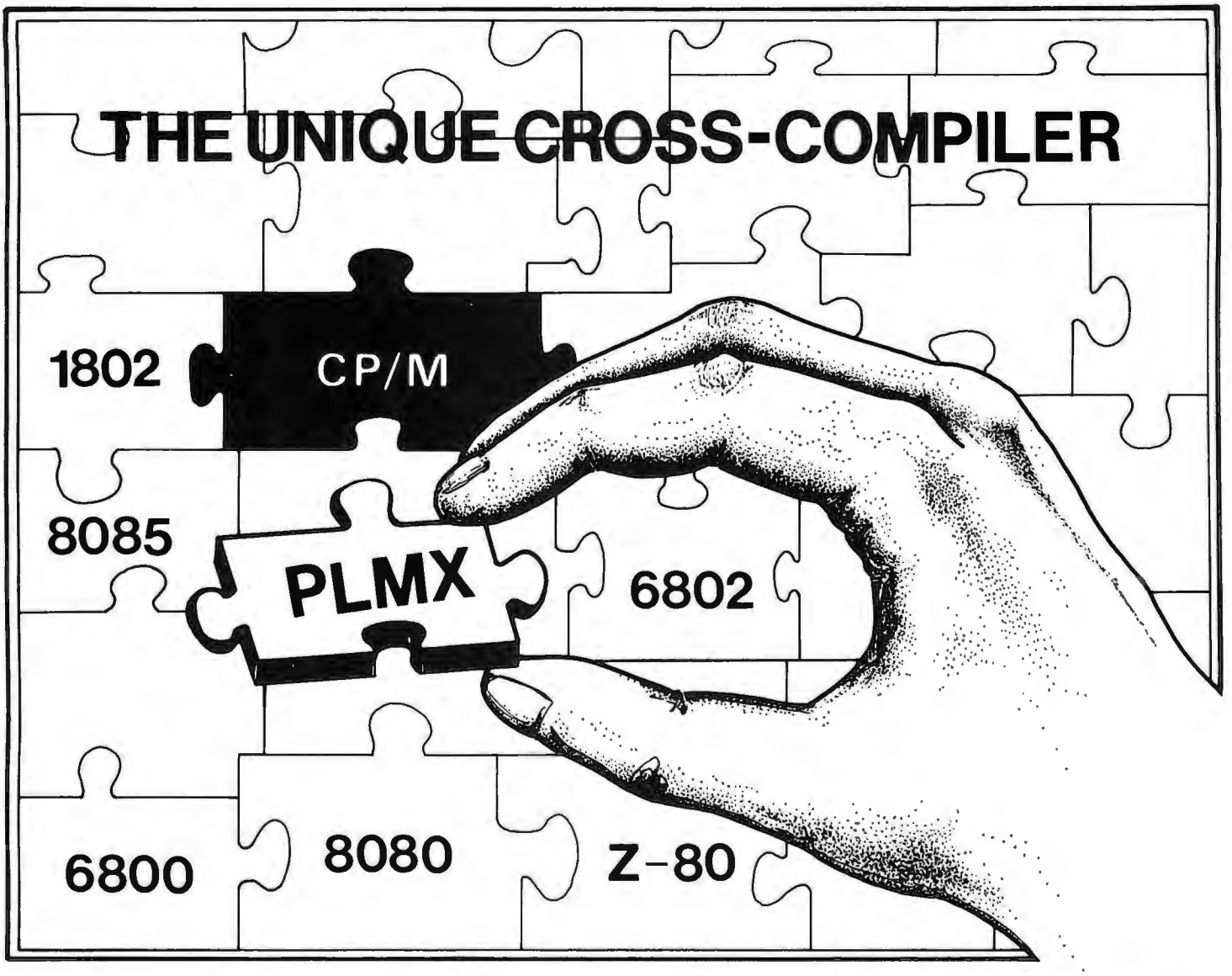
continued on page 79



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San Diego RCPM, 714-271-5615, Brian Kantor. No call back. 24 hrs. 300 & 1200 baud. ITT, SPRINT, MCI. Up as of 05/01/82. @ 2.4 Mb of files on 2 drives.

CP/M-Net (tm), (805) 527-9321, Kelly Smith. 1900-2300 (PST) Mon-Fri, 1900 Fri to 0700 Mon. 110-600+ baud. No alternative long-distance service. Up as of 06/17/82 with 20 Mb of files on 2 hard disks (=8 logical disks). [S. California, Bakersfield].
(System now includes SIG/M Vol. 1-10 = E:, SIG/M Vol. 11-20 =F:, SIG/M Vol. 21-25 = G:. XMODEM 'DISKMENU.DOC' for entire system directory (over 2100 files NOW available!).

Thousand Oaks RBBS, 805-496-9522, Trevor Marshall. No Call Back. 24 hours, initally sporadic. 300 baud only. No ALDS. Up as of 04/14/82. @ 2mb on two floppies.

Sacramento CBBS/RCPM, 916-483-8718, Sacramento Microcomputer Users Group. No call back. 24 hours a day. 110,300,450,600,710 baud. SPRINT. 700K+ Files on two drives. (expansion planned to 1.5m). Up as of 03/20/82. Joe Bersin, Don Bozarth, John Moorhead, & Bob Ress Sysops. [Sacramento, CA]
(S-100 based, with special interest in CP/M; disks will change bi-monthly)

Southwest

Boulder Colorado RCPM, 303-499-9169, Jack Riley. No call back. 1900-2230 weekdays, 1200-2230 weekends. 110,300,450,600,710 baud. No A.L.D.S. Up as of 6/20/82. 32mb hard disk on line at all times. [Boulder, Colorado]

Denver CUG-NODE, 303-781-4937. No call back. 24 hrs. 61-710 baud. SPRINT (& MCI, ITT?). Up as of 06/10/82. @ 1 mb on 2 drives (?)
> NEW SYSTEM, sponsored by (BDS) C Users' Group. For info on
> use & s'ware see the State College Pa. CUG-NODE entry above.

Northwest

Yelm RBBS & CP/M, 206-458-3086, Dave Stanhope. Call back. 24 hrs. 300 baud. No a.l.d.s. Up as of 05/07/82. @ 250 K of files on 2 drives. [Olympia, Washington]

Chuck Forsberg's RCPM, 503,621-3193, No call back. 24 hours. 300/1200 baud. SPRINT . Up as of 06/01/82. @? Files on line. [Oregon]
$ Now can be reached with SPRINT.

Surrey RBBS/RCPM, 604-584-2643. No call back. 24 hrs. No a.l. d.s. Disk capacity not known. Up as of 05/05/82 [Vancouver,BC]
> System missed in earlier RCPMLISTs. General CP/M software.

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continued on page 80

Frog Hollow CBBS/RCPM, 604-873-4007, David Bowerman. No call back. 24 hrs. 100-710 baud. 1.2 mb on 2 drives. Up as of 05/05/82. [Vancouver, BC]
> System missed in earlier RCPMLISTs. General CP/M s'ware; SIG-
> M & CPMUG s'ware available by request. Current trial project
> requiring use of 100 baud ends 05/08; system may then force
> use at => 300 baud.

General North America

CP-MIG. On MicroNet, type 'RSIGS (CP-MIG)'. Sysops Dave Kozinn, Tom Jorgenson & Charlie Strom are arranging to have MN carry much of the new CPMUG and SIG/M software, plus a newsletter and a CP/M-oriented CBBS.

Overseas

Paul Taylor's Remote Computer and RBBS, Australian local; 09 459 3787, Paul Taylor. Available most Australian evenings. Manual connection only, requires CCITT 300 Baud modem in ANSWER or ORIGINATE mode for access. Running IOS (CP/M compatible), 64K Z80, 5Mhz system @ 2MB on 2 8" disks with 48K CACHE buffers. Up as of 12/01/81. [Perth, Western Australia].

SYSTEMS WITH WHICH NO CONTACT HAS BEEN REPORTED SINCE 2/82. These are presumed to be down, but additional information is needed.

Brewster RBBS, 914-279-5693, Paul Bosshold & Carl Erhorn. Call Back at all times. 9pm-8am Weekdays, 24 hour weekends. 300,450, 600, 710 baud. No a.1.d.s. Up as of 02/28/82. @ 500 K of files on 1 drive. [Downstate New York]
(S-100 based. General CP/M software)

MINICBBS/Sorcerer's Apprentice Group, 313-535-9186, Bob Haseman. Call back. 24 hrs. 110, 300, 450, 600 baud. ITT, SPRINT,MCI. Up as of 02/27/82. @ 500 K on 2 drives. [Michigan]
(Running on an Exidy Sorcerer. Needs password, "SORCERER". Special interest in adapting CP/M software and assorted hardware to Sorcerer systems)

Louisville RBBS/RCPM, 502-245-7811, Mike Jung. No call back. 0900-2100 wkdys, 24 hrs wkends. 300 baud. SPRINT, MCI. Up as of 02/20/82. @ 2.5 Mb. of files on 5 drives. [Kentucky]
(Heath/Zenith-based. Emphasisis on BASIC software. Some HDOS stuff available for downloading)

Torrance RCPM, 213-549-9296, Dan Lopez or Alex Valdez. Call back? 1900-2300. 300 baud. ITT, SPRINT, MCI. Up as of 08/20/81. @ 500 K of files (on 2 drives?). [Los Angeles area]
(RBBS & other RCPM system software available. Hours increased to 4 per day and maybe more.)

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Granada Engineering RCP/M, 213-360-5053, Webber Hall.  No Call
back.   ? Hours. 300 baud.  SPRINT, MCI.  @1 mb on two drives.
Up as of 02/21/82.
% New SYSTEM.  Special interest in online BASIC games.
```

Notes:

1. Whether a program exchange system is accessible by an a.l.d.s.(=alternative long-distance service) should be considered when planning to modem over long programs. Charges on SPRINT, ITT/CITYCALL and MCI are 50-60% of Ma Bell's regular long distance rates.

2. Call-back systems are those where a computer and real people share the same telephone line. To contact the people, just dial & let the phone ring until you get an answer. To contact the computer: (1) dial, (2) let the phone ring once, (3) hang up just before the 2nd ring, & (4) re-dial.

3. Note that the 212A/Vadic 1200 Baud modems may not be compatable with yours. Most of the above systems are using Vadic 3451 Triple modems, compatable with both Bell and Vadic Standard. Sign on the first time at 300 baud to determine the system capabilities. Note also that PMMI's can sometimesbe used above 300 baud with 1200 baud systems.

4. All times listed are local time.

5. For further notes & explanations, see RCPMDATA.17

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Dynacomp, Inc.	68
Elliam Associates	74
Frontier Software (ASYST Design Services)	13
Holliday Software	23
IMSAI (Computer Division of the Fisher-Freitas Corp.)	17
Info Soft Systems Inc.	16
Inmac	8
International Software Alliance	70
Kent Video & Computers	81
Lico Associates (A Dagar Affiliated Co.)	22
Martin Data Systems	16
Orthocode Corp.	17
Owens Associates, Inc.	74
Pickles & Trout	82
Quasar Data Products	Inside back cover
Relational Systems International	11
Ryan-McFarland Corp.	15
Small System Design	82
Softronics	8
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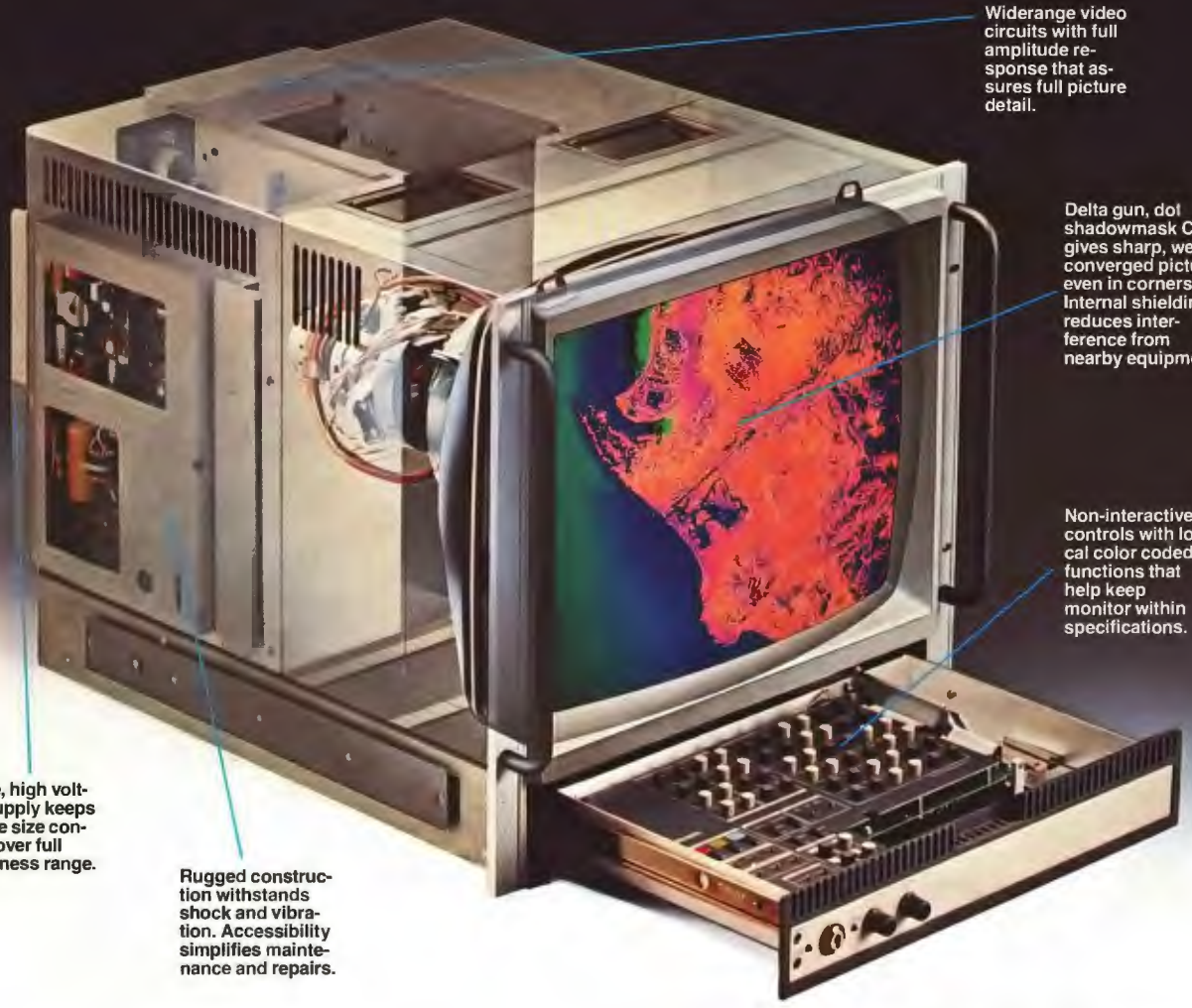

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